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GEORGE WELLS FITZ, M.D.
Editor.

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FRIEDRICH LUDWIG JAHN, AND THE DEVELOPMENT OF POPULAR GYMNASTICS (VEREINSTURNEN) IN GERMANY. II.*

BY FRED EUGENE LEONARD,

Oberlin College.

No analysis of this book (the "Deutsche Turnkunst" of Jahn and Eiselen) can convey any idea of the charm and vigor of its style, or of the lofty patriotism that pervades it. The Preface (pages III-XLVIII) tells the story of the Hasenheide Turnplatz, the origin of the word Turnkunst, and how the present volume came to be written. The author believes that, though incomplete, it reveals the spirit of the workers, and will serve as a guide in similar undertakings elsewhere. Only preliminary and fundamental forms of exercise have been described; such others as fencing, swimming, dancing, and military exercises must be left for a larger work. The early history of gymnastics, especially in connection with popular festivals, deserves careful investigation, for contests of strength and skill are a necessary feature on these occasions. The German nomenclature of gymnastics is explained and defended. Certain Prussian authorities who have proved themselves promoters and patrons of Jahn's efforts are mentioned; and finally a gymnastic annual is promised, the first number to appear the following year at Easter tide. Part I, The Gymnastic Exercises (pages 3-166), is arranged in eighteen sections, devoted respectively to walking, running, jumping, vaulting the horse, balancing, the horizontal bar, the parallel bars, climbing, throwing, pulling, pushing, lifting, carrying, holding the body outstretched horizontally, wrestling, jumping with the hoop, and with the rope, miscellaneous exercises. In each case the necessary apparatus is described. Part II, Gymnastic Games (pages 169-183): Gymnastics and games are links in the same chain, and a gymnasium without a playground is inconceivable; games prepare for social life, and in them one comes to know his mates thoroughly; the characteristics of a good game are given, and six selected games are described—black man, prisoner's base, knight and townsman, the hunt, storming, and German ball. Part III (pages 187-206) tells how to lay out and fit up an outdoor gymnasium, and gives specifications for the complete equipment of one which will accommodate four hundred persons working in squads. Dimensions of each piece of apparatus, and of its parts, are stated in detail, so that the cost in any given locality can be figured out. Part IV (pages 209-244) discusses the management of the grounds and exercises, with sections on the art of gymnastics, the gymnasium, the teacher, the exercises, the exercise period, costume, meeting place (the *Tie*), and spectators; and gives the general and special rules to be observed by the turners. Part V (pages 247-288) contains a classified bibliography of gymnastics, with about 170 titles; and explains the plan of an outdoor gymnasium shown on the first of two large folding plates. A portion of the first plate and all of the second illustrate various forms of apparatus.

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*Part I of this article appeared in the REVIEW for March, 1900 (Vol. V., pp. 18-39).

After the appearance of the book work was continued at the Hasenheide throughout the seasons of 1816-18 with little change, from early spring until the exercises of October 18th, the anniversary of the Battle of Leipsic. Gymnastics must still hibernate during the winter, from lack of suitable accommodations indoors. On October 22nd, 1816, Jahn reported that the number of turners in Berlin had passed the thousand mark. The next year it increased to 1074, and life on the Turnplatz reached its culmination. Hans Ferdinand Massmann had returned to Berlin at Easter, after a year at Jena, and from July 15th till September 2nd he took the place of Eiselen at the grounds, while the latter was absent at Kiel in the interest of his health. More trees were planted, seats were provided around the *Tie,* and other improvements and additions were made. The turners began the afternoon with whatever form of exercise each preferred for himself

(*Kürturnen*); then followed a period of rest, after which all took part in the orderly exercises (*Turnschule*), grouped in squads and divisions according to age. Each squad had its leader (*Vorturner*), who also kept a record of the attendance and proficiency of its members. Massmann had prepared a set of instructions for the guidance of these leaders, and there were written lists of exercises in tabular form (*Turntafeln*) to show the steps of progression in each group.

Whole days were often given up to games, which were still popular, and almost every Saturday they were played all night long. Excursions, with older turners especially, and enlivened by Jahn's talk and by many a song, were continued during this and the following summer. The nights were passed in hay-lofts or on the straw in some shed, and at sunrise they started on, first singing together a selection more or less devotional. For Jahn was an earnest Christian; his knapsack always contained a Bible, and he frequently read aloud from it to his companions, showing a preference for prophetic passages from the Old Testament. At the celebration of October 18th thousands were present. Jahn first gave a review of the year's progress; following this all joined in a song, and then came competitive exercises, a torch-light procession to the Rollberge, more speech-making and singing, and the lighting of huge bonfires. On the 31st of the same month the universities of Jena and Kiel each conferred on Jahn the honorary degree of Doctor of Philosophy, in recognition of his services to the fatherland in time of need, his stimulating influence on the young, his power as a public speaker, and his efforts in behalf of the German language.

The number of turners dropped to 815 in the season of 1818, but there seems to have been no weakening in Jahn's hold upon the love of his followers. We hear again of the close friendships formed among them, the manly qualities encouraged, the earnest effort to be purely German in speech, custom, and dress, and the underlying seriousness of their joyous life together. After the day's exercise they used to return to the city in groups, each with some favorite leader as its center. Singing and conversation alternated till the Kottbus gate was reached; there they halted till all had come up, joined in a final song, and then scattered to their homes.

The next spring (1819) the Turnplatz did not open at the usual time. The Prussian Ministry had in mind a union of gymnastics with the whole scheme of instruction in the schools.

Summer and winter exercises alike were to be under its supervision. Additional grounds were to be opened, and one site had already been secured near Berlin. The plan was nearly ready, and Jahn was informed that for the present, until it should be perfected, the authorities desired that the Hasenheide Turnplatz should remain closed.

The years 1814-18 had witnessed a rapid and remarkable spread of the Jahn *Turnen* far beyond the narrow bounds of its first home, throughout the length and breadth of the Prussian provinces, and into other German states as well. Outdoor gymnasia had been opened, for example, at Königsberg, Elbing, Marienwerder, and at least four other cities in East and West Prussia; at a score of places in Silesia, beginning with Breslau and Liegnitz, and including Bunzlau, Frankenstein, Waldenburg, Strehlen, Hirschberg, Neisse, Leobschütz, Gleiwitz, Brieg, and Kreuzburg; at Friedland, Neubrandenburg, Neustrelitz, and Malchin in Mecklenburg; Potsdam, Frankfort-on-the-Oder, and Prenzlau in Brandenburg; the free cities of Hamburg and Lübeck; in central Germany at Leipsic, Halle, Jena, Erfurt, Gotha, Eisenach, Rudolstadt, Mühlhausen, Nordhausen, and Heiligenstadt; at Frankfort, Hanau, and Offenbach-on-the-Main, and along the Rhine at Mainz, Bonn, Cologne, and Düsseldorf; at Darmstadt and Giessen in Hesse, Heidelberg in Baden, Stuttgart and Tübingen in Württemberg, and Erlangen and Hof in Bavaria.

In general the early history of these Turnplätze resembles that of the parent organization in Berlin. A majority of them were started in connection with higher schools for boys, but they often included in their membership teachers and university students, clerks and young mechanics,—all classes of society. Usually the prime mover was some teacher, impelled, like Jahn, by a motive which was patriotic rather than pedagogical; and afterwards local, provincial, or state authorities not infrequently added their support. Sometimes it was the public officials themselves who inaugurated the movement. The common incentive was the great tidal wave of love for the fatherland which swept over Germany at the time of the War of Liberation. Many a teacher who had fought in Lützow's or some other volunteer corps and joined in the stirring songs of Karl Theodor Körner about the camp-fire or on the march went back to his class-room filled with a desire to see developed in his young charges a stronger patriotism, a simpler, more vigorous, and more manly type of life, less regard for distinctions of rank and wealth, a spirit of mutual helpfulness and a willingness to unite with others for the common welfare. Jahn's *Turnen* had already shown its fitness for these ends.

In many cases assistance was received directly from Berlin. Thus in September of 1814 Jahn sent Eduard Dürre, one of his Vorturner, to Friedland in Mecklenburg, where two teachers were trying to introduce the exercises in the Gelehrtenschule; and the same year Massmann started a Turnplatz at Schwerinsburg. The next year Karl von Wiedekind went to Königsberg and another pupil, Zernial, to Düsseldorf, there to continue their studies and at the same time give instruction in gymnastics. Bornemann's second son, Adolf, who was a student of pharmacy at Liegnitz, began an independent work in that city, and later the Ritterakademie there appointed as *Turnlehrer* a teacher called from the Schindler'sche Orphan Asylum in Berlin. Of much wider influence was the Turnplatz fitted up in the spring of 1815 at Breslau by Christian Wilhelm Harnisch, teacher in the Protestant Normal School, but formerly associated with Jahn at the Plamann Institute in Berlin. The numbers increased the first season from 10 to 145; the next year the provincial school authorities made a grant of 103 1-3 thalers for his use; in 1817 the grant was doubled, the attendance rose to,292, and a plot twelve acres in extent was acquired; in 1818, when Massmann came to the assistance of Harnisch and undertook the direction of the exercises, the roll of 570 members included 28 townfolk not connected with any school, 38 students in the University, 260 pupils from the four higher schools for boys, 156 from the two normal schools and the school of architecture, 59 from the public elementary schools, and 29 from private schools.

One of Jahn's best pupils, Wilhelm Benecke, went to Hamburg in June of 1815 to complete his business training. He at once set up a horizontal bar, parallel bars, and climbing poles in the yard and garden of his host, and within three weeks was practicing the Jahn gymnastics with a little circle of friends. Fencing-master G. Nikolai also laid out an open-air gymnasium, but the two soon combined forces, and September 1, 1816, organized a society which has continued in existence down to the present day. It is said that when Benecke left Hamburg in April, 1819, there were about 140 active members; and more than this, almost every school in the city had introduced gymnastics into its program, and almost every family which could find room in its yard or garden had provided apparatus there for the boys of the household.

At the request of the *Oberpräsident* of the Rhine Province Jahn recommended in 1816 a teacher of gymnastics for Cologne, and a similar request from two Jena professors was met by persuading Massmann and Dürre to continue their studies in that university for a time. Turner Bergius was also called from Berlin to be the leader for two months at the Neustrelitz Turnplatz, just opened. Towards the close of 1817 Jahn reported that *Vorturner* had gone out from the Hasenheide to Heiligenstadt, Neumark, Lübeck, Mühlhausen, Nordhausen, and Prenzlau, besides others to places already mentioned. In case of Lübeck, popular subscriptions, following addresses by the authorities of the city on Jahn's work in Berlin, made it possible to equip an outdoor gymnasium and obtain from the fountain-head C. E. Schultze as its director. 116 were enrolled the first summer, and during the following winter about thirty pupils kept up the exercises in a closed room.

When the "Deutsche Turnkunst" appeared in 1816 it became at once the authority on all Turnplätze and the guide in opening new ones. A glance at the contents will show how admirably and completely it meets the requirements of such a manual. Minister von Schuckmann ordered fifty copies sent to the West Prussian authorities in Marienwerder, at their request, and two hundred more for distribution among other provincial officials. In Westphalia, for example, twenty-four higher classical schools for boys were thus supplied. Numerous visitors, too, came to Berlin for a longer or shorter time to be trained as teachers of gymnastics. Some did this at their own motion and expense, and others received state support. In 1816 there were, among others, three normal school students from Weissenfels, and teachers from Neumark, Neustadt a. d. Dosse, Wusterhausen, and Neurippen. Jahn made them all welcome, charged no fees, gave his time and personal interest freely, in regular hours and out, and saw that each one obtained the best possible preparation.

His own brief trips and longer excursions should also be mentioned in this connection. A short visit which he paid to Frankfort-on-the-Main in 1815 led a band of school boys there to fit up a private Turnplatz. In September of the next year he was very cordially received by a congress of seventy school inspectors, clergymen, and teachers at Frankfort-on-the-Oder, and delivered an address on gymnastics which made a deep impression. A month's excursion with eighteen older turners in July and Auggust of 1817 took him through Mecklenburg and Pomerania to the Island of Rügen, in the Baltic. The party was hospitably greeted and entertained by the turners in Neustrelitz, Neubrandenburg, and Friedland, joining with them in exercises on the Turnplatz, or matching strength at tug-of-war and wrestling. They met other turners from Prenzlau, and at Puttbus, before a large audience, gave a sort of gymnastic exhibition with an accompaniment of national songs. Again the next summer he set out with thirteen school boys, intending to be absent four weeks. They journeyed southeast through Hirschberg and Waldenburg to Breslau, spent several days with turners in the Silesian capital, and on the way back visited Liegnitz, Züllichau, and Frankfort-on-the-Oder.

Still another agency in the spread of Jahn *Turnen* is found in the *Burschenschaften,* or general student unions, organized in the German universities as one result of the War of Liberation. Students who had served in Lützow's Free Corps, the most national of the volunteer regiments, took the lead in forming the first of these at Jena, where it was publicly announced on the 12th of June, 1815. The new association was intended to correct the abuses of the *Landsmannschaften* or sectional clubs, to promote the physical and moral vigor of its members, and to awaken love for the common German fatherland and a desire to see it free and united. Gymnastics was at once introduced and practiced after the Berlin fashion. Jahn watched the inception and spread of the movement with the keenest interest, if he did not himself have a hand in sketching the plan of organization; and he sent to Jena two of his most trusted pupils, Dürre and Massmann, whose activity there was not confined to the Turnplatz. Other Burschenschaften were soon formed in the universities at Halle, Leipsic, Giessen, Heidelberg, Bonn, Erlangen, and elsewhere, and with them wandering students from Berlin, Breslau, and Jena carried the art of the Hasenheide *Turnvater.* Thus Karl Völker, one of the directors of the Jena Burschenschaft, after completing his studies there went to Tübingen in 1818 to accept an invitation from students in that university to help them organize a Burschenschaft and start a Turnplatz. The city offered a site, upon condition that the boys in its *Bürgerschule* and *Gymnasium* should be allowed a share in the exercises. In May, 1817, another student, Christian Sartorius, from Giessen, formed a gymnastic society among school boys and others in Darmstadt, and fitted up an outdoor gymnasium for their use.

The key to the history of the Hasenheide Turnplatz and the scores of others patterned after it in the years 1814-18 we have found in the spirit of the German War of Liberation. To this also are to be traced the repressive measures which suddenly checked the growth of the seemingly lusty organization before the completion of its first decade, and for more than twenty years banished it as a factor in the popular life. When the common people rose in arms against Napoleon it was with the hope that war would result, not only in freedom from the foreign yoke, but in closer union between the semi-independent German states, and the substitution of constitutional liberty for the absolutism of personal rule. They secured promises of ample concession to these cravings, but found, after peace was declared, that their rulers had no intention of meeting engagements made under duress. The Germanic Confederation of 1815 was a sorry substitute for the vigorous empire anticipated, and under the lead of Prince Metternich, Austrian minister of foreign affairs, the Holy Alliance at once adopted a reactionary policy which was hostile to the free movement of ideas and sought to allay the agitation of the popular mind. The turners represented a political tendency, and therefore incurred suspicion.

Beginning January 17th, 1817, Jahn had delivered in Berlin a series of twenty-one semi-weekly public lectures on his favorite subject, German Nationality. Among the great number of persons from all classes who heard him some were offended by his blunt speech, and various extreme, unguarded, and misunderstood statements gave a handle to opponents who accused him of revolutionary principles. He was eccentric and independent always, and with his followers on the Turnplatz took exception to much that was customary in dress, speech, and manners. Disquieting rumors were in circulation regarding his conduct on the Rügen and Breslau excursions, and it was suggested that the large gatherings at the anniversary celebrations of the Battle of Leipsic were dangerous to public order and afforded a chance for demagogues. In the summer of 1817 Jahn was unfavorably criticized by two writers in the Berlin press, who attributed to his work in the Hasenheide injurious physical, mental, and moral effects; and the discussion did not cease when reports from the directors of three higher schools and a special investigation made by Medical Councilor Dr. von Könen, at the request of Minister von Schuckmann, had failed to sustain the objections raised, and on the contrary brought complete vindication. The next year a second and more heated controversy over the whole subject of *Turnen* broke out in Breslau, enlisting on each side not a few distinguished men. One result of the dispute was the closing of the Turnplätze at Breslau and Liegnitz by an official order of October 16, 1818.

Under the auspices of the Burschenschaften hundreds of students from many German universities met in Eisenach October 18, 1817, to celebrate the anniversary of the Battle of Leipsic and the tercentenary of the Protestant Reformation. There were appropriate exercises in the town and in the Hall of the Minnesingers at the Wartburg Castle, and when evening came all gathered about a huge bonfire for more speeches and singing. Suddenly Massmann appeared with friends carrying bundles of waste-paper done up and labeled to represent books. After recalling Luther's burning of the papal bull he read off from a prepared list the titles of certain reactionary writings hostile to German unity, constitutional government, and free institutions; and as each item was reached the corresponding bundle was pitchforked into the fire with suitable comments. Common opinion credited Jahn with being the real originator of this student prank. It naturally aroused the anger of the authors concerned, among whom Kotzebue and Kamptz deserve mention here, since their names appear again in the next paragraph. Metternich saw in the performance the indication of a widespread conspiracy.

A conference of monarchs at Aix-la-Chapelle in the fall of 1818 did much to confirm Frederick William III. of Prussia in his suspicions of intrigue. Metternich also laid before Prince Wittgenstein, the Prussian Minister of State, a memorial in which he declared that the Burschenschaften were nurseries of revolution and the Turnplätze preparatory schools for university disorders; both must be suppressed, for no palliative measures would suffice. A more forcible argument was the assassination of the German dramatist Kotzebue by Karl Ludwig Sand at Mannheim, on the 23rd of March, 1819. Kotzebue was a paid spy of Russia and a reactionary writer who had attacked with especial bitterness the student unions and the turners. Sand was a turner, and had visited Jahn and others in Berlin the year before; he was a member of the Jena Burschenschaft, and had been present at the Wartburgfest. Without any proof of the fact, it was assumed that he had carried out the decision of an organization. On the night of July 13-14 Jahn was arrested and taken to the fortress of Spandau, on suspicion of "secret and most treasonable associations." Meanwhile Kamptz had been made Prussian Minister of Police and clothed with extraordinary powers, and a special commission had been charged with the prosecution of demagogues. A little later a conference of German ministers adopted the oppressive Carlsbad Decrees, which were ratified by the Frankfort Diet September 20th. These provided for censorship of the press, police supervision of the universities, and a central commission of seven to search out "the origin and ramification of revolutionary conspiracies and demagogic associations." The Burschenschaft was dissolved, and January 2nd, 1820, Frederick William III. decreed that *Turnen* should absolutely cease throughout Prussia.

Jahn was kept at Spandau for a few days, transferred to Küstrin July 17th, brought back to Berlin for trial early in October, and by an official report of February 15th, 1820, the chief charges against him were declared null and void. A cabinet order of May 31st released him from arrest, but stipulated that he should reside, till further notice, in the fortress of Kolberg, on the Baltic, and placed him under the oversight of the commanding officer there. The 1000 thalers which he had been receiving from the state—800 as teacher of gymnastics and 200 from the Ministry of War—was to be continued. His two younger children had died since his arrest; but he had with him his wife and remaining child, and enjoyed a fair degree of freedom, busying himself with historical and other studies. His wife died here September 8th, 1823. After prolonged investigation the supreme court at Breslau, by its decision of January 13, 1824, absolved him from all suspicion of complicity in the murder of Kotzebue, but sentenced him to two years additional confinement in a fortress on account of "repeated irreverent and insolent utterances regarding existing conditions and regulations in the state." From this decision Jahn appealed, and sent in his "self defense" (*Selbstvertheidigung,* finished October 9, 1824) to the supreme court at Frankfort-on-the-Oder, by which body he was entirely acquitted March 15, 1825.

But a cabinet order of May 3rd forbade his living in Berlin or within a radius of ten miles from the capital, or in any city containing a university or higher school for boys; and wherever he settled he was to remain under police surveillance. The thousand-thaler pension remained unchanged. Jahn selected for his home the Thuringian town of Freyburg-on-the-Unstrut, about thirty miles west and south of Leipsic. Thither, besides his son, he took his second wife, Emilie Hentsch, and later brought his mother, who, after the death of her husband in 1811 had followed her son to Berlin. In the winter of 1828 he was obliged to move again, for it was reported in Berlin that he had visited Merseburg frequently and had been in communication with schoolboys in that and neighboring cities. For seven years, therefore, he resided in Kölleda, twenty-five miles farther west, and meanwhile had to undergo, in 1830, six weeks' confinement in the fortress of Erfurt because of expressions used in a complaint to the provincial diet.

From Kölleda Jahn returned to Freyburg. There on a night in August, 1838, fire destroyed his house and most of its contents, including his library and many valuable manuscripts. Gifts from a wide circle of sympathizing friends enabled him to build a new house of his own, however, on the slope of the castle hill; but the loss of books and papers meant the cessation of his literary activity. The accession of Frederick William IV. to the throne of Prussia in 1840 was followed by the final removal of all police restrictions, and brought him also the long-expected decoration of the Iron Cross. By a cabinet order of June 6, 1842, gymnastics was "formally recognized as a necessary and indispensable part of male education and received into the circle of means for popular education." *Turnen* began to revive with this, but though Jahn followed its development with interest and received hospitably the turners who visited his home, he took no active part in the movement. In 1844 he attended the centennial exercises of his first school, the *Gymnasium* at Salzwedel. Four years later he was present as a delegate in the German national assembly at Frankfort-on-the-Main, but returned to his home bitterly disappointed. He died at Freyburg, after a brief illness, October 15, 1852.

Although Prussia's example in suppressing public *Turnen* was followed by other German states, the procedure was by no means universal. Thus the reaction did not directly affect the Kingdom of Württemberg, the Grand Duchies of Mecklenburg and Oldenburg, the Duchy of Brunswick, and the Free Cities of Hamburg and Lübeck; and it was not of long duration in the Kingdom of Bavaria. Between 1820 and 1840 the old organizations continued without interruption, therefore, in scattered cities, and new societies of older boys or young men who met regularly for exercise were formed in Hanover (1831), Frankfort-on-the-Main (1833), Plauen in Saxony (1834), and Pforzheim in Baden (1835). Even in Berlin Ernst Eiselen (1792-1846), Jahn's faithful assistant, was allowed to open a private indoor and outdoor gymnasium in 1828. The venture prospered, and he added a gymnasium for girls in 1832, and four years later opened a branch institution in another part of the city. The latter was transferred to his helper Wilhelm Lübeck (1809-1879) in 1839. Both men trained many teachers of gymnastics, and wrote valuable manuals, bridging over in this way the gap between the older and the newer *Turnen*.

With the accession of Frederick William IV. to the Prussian throne in 1840 the hopes of his people were kindled afresh, and during the next decade all Germany was stirred by an agitation for reform which steadily gathered force until the outbreak of the French Revolution in 1848 brought it to a climax. One sign of this quickened national and political life was a general revival of the Jahn gymnastics. The incorporation of physical training in school programs led to the formation of separate societies (*Männerturnvereine*) for adults, in which the bond of union was at first merely an agreement to meet for exercise at certain fixed hours; but this was soon followed by the adoption of by-laws, the appointment of boards of directors, and the fixing of definite dues. Partly as a result of excursions and exhibitions new societies sprang up everywhere, until at the close of the decade they numbered nearly three hundred. The desire for union which early showed itself was met by holding district conventions (*Turntage*) and gatherings for gymnastic exercises (*Turnfeste*). So we find turners from Frankfort, Hanau, and Mainz coming together in Frankfort-on-the-Main September 5th, 1841, for the first of several annual Turnfeste, and on the Feldberg in 1844 inaugurating the important series of *Feldbergfeste;* the Swabian turners holding a convention and Turnfest at Gmund, in upper Bavaria, in 1844, and later Turnfeste at Reutlingen (1845) and Heilbron (1846) in Württemberg; a Rhine-Westphalian Turnfest at Iserlohn October 9th and 10th, 1847; and in Saxony, where progress had been especially active and orderly, the first Turntag at Dresden, October 31, 1846, attended by delegates from fifty-four societies. Periodicals devoted to the interests of the turners also began to make their appearance—Karl Euler's "Jahrbücher der deutschen Turnkunst" (Danzig, 1843, and Solingen, 1844), "Der Turner" (Dresden, 1846-52), the "Mainzer Turnzeitung" (1846), Ravenstein's "Nachrichtsblatt für Deutschlands Turnanstalten und Turngemeinden" (Frankfort, 1846 and 1847), and K. Euler and Lamey's "Turnzeitung" (Karlsruhe, 1846 and 1847). But a second period of reaction set in with the revolutionary movements of 1849, in which many of the turners, the Saxon and South German ones especially, took an active part. In carrying out their policy of repression the various governments again disbanded or put under careful supervision the gymnastic societies, and not only those directly concerned in disturbances, but others which had been well-disposed and preferred to keep *Turnen* free from partisan politics. Of the three hundred societies in existence in 1849 hardly a third survived the next ten years. A few, however, continued vigorous and active, and this number included some of the largest and best Turnvereine in Saxony and Württemberg. Here Theodor Georgii started his "Turnblatt für und aus Schwaben" (1850-53), followed by the "Esslinger Turnzeitung" (1854-56), and this in turn was succeeded by the "Deutsche Turnzeitung" (Leipsic, 1856-), the present organ of the German Turnerschaft. In Dresden Moritz Kloss began to publish the "Neue Jahrbücher für die Turnkunst" (1855-94).

Toward the close of the fifties signs of life began to multiply. The war of France and Sardinia with Austria (1859) and uncertainty as to future relations between France and the German states helped to rouse the slumbering societies and fill abandoned Turnplätze once more. A summons printed in the Deutsche Turnzeitung in March of 1860 and signed by Theodor Georgii and Karl Kallenberg resulted in the first general German convention and Turnfest, held at Coburg June 16-19 of that year—the anniversary of the Battle of Waterloo. More than a thousand adult turners were present, representing 139 cities and villages. Formal organization into a national body was impossible as yet, but notwithstanding this a feeling of union was established and a great impulse was given to further growth. The next year the fiftieth anniversary of the opening of the Hasenheide Turnplatz was celebrated by a second convention and Turnfest at Berlin, August 10-12. The attendance rose to 2812 adult turners, 1659 of them from outside the capital. 262 places were represented. This time a standing "Committee of the German Turnvereine," composed of 15 members, was appointed to look after matters of general interest. The committee, at its meeting in Gotha the following December, organized by electing Theodor Georgii chairman and Dr. Ferdinand Goetz business manager; it decided that Turnvereine as such must hold themselves unconditionally aloof from all political partisanship, took action which put a damper on those who wished to have military exercises introduced in all societies, and charged Georg Hirth with an investigation which led to the first "Statistical Annual of German Turnvereine" (Leipsic, 1863). According to this there were on July 1st, 1862, in 1153 towns and cities, 1284 societies, not less than 1050 of them organized since 1860. In 1863, the semi-centennial of the Battle of Leipsic, more than 20,000 turners gathered in that city for the third convention and Turnfest. Another statistical annual issued two years later showed an increase of 650 societies and more than 33,000 members over the numbers recorded in the first volume (July 1, 1862—November 1, 1864).

Enthusiasm had reached such a pitch that a reaction was inevitable, and the Austro-Prussian War of 1866, by diverting attention and draining the resources of the people, interfered with further expansion and threatened to paralyze the existing Turnvereine. In the five years between November 1, 1864, and August 1, 1869, there had been a falling off of nearly four hundred societies and forty thousand members, according to the statistical annual of 1871. A Turnfest planned for July 22-24, 1866, in Nuremberg, had to be given up; but two years later 168 delegates assembled for the fourth general convention in Weimar (July 20 and 21, 1868), and there formally organized the *"Deutsche Turnerschaft,"* a firm union of all German gymnastic societies, including the Austrian Germans. A constitution was adopted, the old Committee was increased to 22 members, and Georgii and Goetz were continued in their positions as chairman and business manager. During the Franco-Prussian War of 1870-71 fifteen thousand turners followed the colors to the field and many gymnasia were converted into hospitals. But in spite of this temporary check the war brought what Jahn and his followers had looked forward to for sixty years and more—the unification of Germany. Experiences of march, battle field, and camp had driven home to the minds of all the need and value of physical efficiency as nothing else could do it; and after the formation of the new Empire popular *Turnen* began, at first slowly and then more rapidly, to flourish as never before, and this time with the full approval of the state.

The following table shows the development that has taken place since the first statistical investigation was made, in 1862. The second column gives the number of German towns and cities in which there were popular gymnastic societies (*Turnvereine*), and the third column the total number of these societies irrespective of membership in the *Turnerschaft*. "Active" turners are those who actually take part in the gymnastic exercises.

Date		Places	Turnvereine	Belonging to Deutsche Turnerschaft (since 1868		
				Societies	Members	Active Turners
1862	July 1......	1153	1279	....	134,507	96,272
1864	November 1	1769	1934	....	167,942	105,676
1869	August 1...	1415	1546	....	128,491	80,327
1876	November 1	1532	1788	1547	156,590	69,872
1880	January 1	1741	2226	1971	170,315	86,159
1885	"	2413	3208	2878	267,354	144,134
1890	"	3340	4434	3992	388,513	195.375
1895	"	4536	6061	5312	529,925	270.528
1900	"	5509	7238	6483	647,548	310,374
1904	"	6195	8400	7489	760,338	369,691

General German *Turnfeste* and conventions (*Turntage*) of the Deutsche Turnerschaft (since 1868) have been held as follows:

No.	Turnfeste		Turntage	
	Place	Date	Place	Date
I	Coburg	1860 June 17-18	Coburg	1860 June
II	Berlin	1861 August 10-12	Berlin	1861 August
III	Leipsic	1863 August 2-5	Leipsic	1863 August
IV	Bonn	1872 August 3-6	Weimar	1868 July 20 and 21
V	Frankfurt	1880 July 25-28	Bonn	1872 August 3
VI	Dresden	1885 July 19-21	Dresden	1875 July 25 and 26
VII	Munich	1889 July 28-31	Berlin	1879 July 27 and 28
VIII	Breslau	1894 July 22-24	Eisenach	1883 July 24 and 25
IX	Hamburg	1898 July 23-27	Coburg	1887 July 19 and 20
X	Nuremberg	1903 July 18-22	Hanover	1891 July 21 and 22
XI	....	....	Esslingen	1895 July 22 and 23
XII	....	....	Naumburg a. S.	1899 July 30 and 31
XIII	....	....	Berlin	1904 April 4 and 5

The Bonn Turnfest fell in the period of decline, and one planned for Breslau in 1878 was given up because disturbed political conditions threatened its success; but beginning at Frankfort-on-the-Main two years later these great national gatherings have brought together not less than ten thousand turners, and at Hamburg and Nuremberg between twenty-five and thirty thousand were present. Successive conventions have left the outward form of the German Turnerschaft almost unchanged, although various details have been modified. The Esslingen Turntag defined its object to be "the promotion of German gymnastics as a means to physical and moral vigor, and the fostering of patriotic sentiment and a spirit of racial unity among Germans. In 1887 Georgii gave up his position as Chairman of the Committee and was succeeded by Alfred Maul, of Karlsruhe, who resigned in 1894. The next year Dr. Ferdinand Goetz (the present Chairman) was appointed to that office, and his place as Business Manager was given to Dr. Hugo Rühl, of Stettin.

Turnvater Jahn is still held in loyal and grateful remembrance, as the apostle of German unity and the man who gave to the German people a love for gymnastics. The hundredth anniversary of his birth (1878) and the fiftieth anniversary of his death (1902) were celebrated throughout the entire Turnerschaft. That body has erected monuments in his honor at the Berlin Turnplatz, and in Lanz, Freyburg, and other places; has built a memorial gymnasium (*Turnhalle*) over his grave in Freyburg; and has brought together there, in the "Jahn Museum," numerous relics of the man and his work. In 1903 a separate building was provided for this collection.

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PLAYGROUNDS FOR INCLEMENT WEATHER.*

BY LEIGH K. BAKER, M.D.

I do not wish to be understood as advocating indoor at the expense of outdoor playgrounds. I advocate them as the best available substitute for the latter for town and city children during the four or five months of inclement weather. Those months when children in the northern cities do not, will not, and often should not use outdoor playgrounds, whatever may be said to the contrary.

In 1902-3, from November twenty-second to March fifteenth, a daily record of the weather conditions as affecting schools, was kept. We marked a calendar each half day to indicate whether the playgrounds were wet, dry, or covered with dry snow. The result is given in the following table:

Number of half school days included in the period of observation.	136
Number of half school days on which the playgrounds were wet..	73
Number of half school days on which the playgrounds contained dry snow	29
Number of half school days on which playground surfaces were dry	34

Available for practical use one half day in four.

Since they could not skate in the yards and were not allowed to snowball, the children took but little interest in the playgrounds on three days out of four. Many observations from the school room windows failed to discover more than a very small per cent. of the pupils on the playgrounds during recess. Those who left their rooms, simply visited the water closets and then returned to their seats. On the other hand, wherever, and whenever opportunities were given for gymnastics and games in the halls, the children entered into the matter with great interest and delight.

It is alarming to one who visits city schools with his eyes open to see, as he invariably must, on every hand, so many puny chil-

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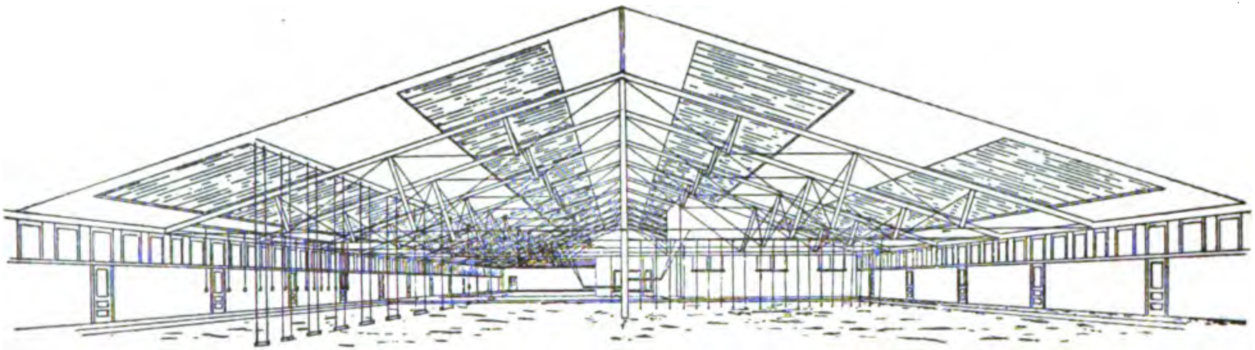
*Read at the Convention of the American Physical Education Association; Section of Physical Directors of the North American Public Schools; Olympic Games Programme, St. Louis, Mo., August 22, 1904.



ENCLOSED PLAYGROUND.

dren, so many vacant seats. Why is it that when we start in with almost thirteen thousand children six years of age we find but two thousand, seven hundred, scarcely twenty-two per cent., left for the eighth grade at thirteen years of age, notwithstanding juvenile courts, a well organized truancy police and a law which compells parents to school their children until they are fourteen years of age? (See Table IV, Exhibit A, Cleveland School Report for 1903. 12904 pupils registered in the first grade. Average age, 6.6 years. 2708 pupils registered in the eighth grade. Average age, 13.5 years.)

When we begin to study attendance it causes us to pause and think. It looks very much as if the schools do not *hold* the pupils. No doubt the teachers and pupils do enough work but is its character and adjustment such as to best fit the latter for city life and living?

Week after week of sedentary work, after the middle of November, takes the tan off the face, the sparkle out of the eye, and a languid look takes the place of the sprightliness of October. This increases from week to week and by the middle of January the attendance begins to suffer. From this date until the first of April is a period our city teachers have learned to dread. Witness the following inquiry:

CLEVELAND, OHIO., February 27, 1904.
OFFICE OF THE SUPERINTENDENT OF INSTRUCTION.
DEPARTMENT OF SCHOOL HYGIENE.

To Principals of the Elementary Schools:

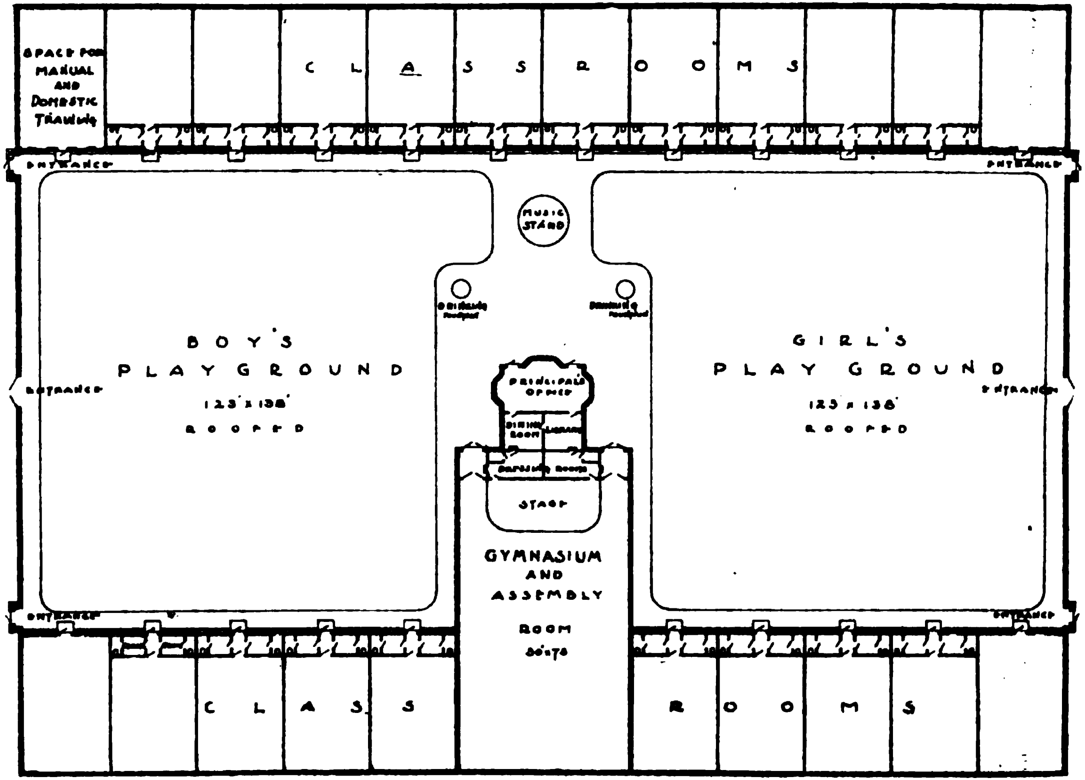
Please request teachers to record the names and addresses of pupils who are absent from school on account of sickness during the week beginning February 29th.

Place an X before the names of those who are out of school during the week on account of a cold or sore throat.

Please return these reports to the office with the weekly report March 5th. They are wanted by the Health Officer who is investigating the threatened epidemic of typhoid.

Respectfully yours,
LEIGH K. BAKER, *Supervisor*.

In answer to the above, sixty elementary school principals reported, sending in the names of 3479 pupils absent during the week on account of sickness. Of all those who were absent, thirty-nine per cent. were marked as having been absent on account of a cold or sore throat. The statistics of attendance during this February of 1904 show that over eleven per cent. of the elementary children belonging to the Cleveland Schools were absent from school.



FLOOR PLAN OF ONE STORY BUILDING.

During several seasons some attempts have been made to use the parks for coasting and skating. While commendable, this practice is too limited to be adequate.

During 1903, a Cleveland paper published a winter sports bulletin for the benefit of the children. The report, prepared in my office from these bulletins, notes that during the skating season from January twenty-fourth to March seventh, a period of forty-three days, there was skating on ten days. On most of these days the park force had to prepare the ice before it could be used. Yet this was a typical winter for Cleveland, so far as skating is concerned. While the little we had was appreciated by those children who could reach the parks and rinks, the ice was too distant for the practical use of the great majority of the children. The same may be said of all outdoor sports. Our parks, as a rule, are not of the proper size, design, and distribution, to afford daily facilities for outdoor exercise for the majority of city children. Hence, I hold that every large school building should have about it, large playgrounds and school gardens, several acres in extent. In cities, where land is expensive, this can be accomplished through the co-operation of community interests. On the same grounds can be placed the branch library, the engine house of the fire department, the manual training plant and, in the school building, public gymnasiums for evening use by all members of the school district as well as for the daily use of all public school pupils.

The dedication of several acres in each school district to the constitution building of public school pupils may seem unreasonable to those who kick when we spend twenty to twenty-five dollars each, per year, on the schooling of our boys and girls. But what little college would be satisfied with less than ten or fifteen acres of campus, even though located in the heart of a town or city? And what college could exist on the pitiful sum doled out, often begrudgingly, to the elementary school?

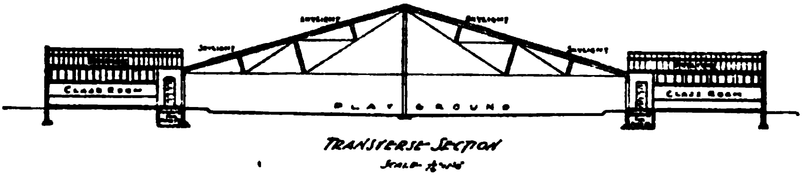
The state must be induced to take up the matter and make it possible for boards of education to plan in a *large* way, so that ultimately, on each side of every school building will be found such playgrounds as are shown in the cut. Within the walls should be shade trees. In the corners and along the borders, fringes of lawn and flowers, but most of the surface should be reserved for play. With a foundation of screened cinders, the surface should be treated with fine gravel and sand.

The grounds and apparatus should be kept in condition to facilitate the play of *all* the children and before and after school and during the exercise periods the special teachers of physical training should be found upon the grounds organizing, leading, instructing and in every way encouraging the physical activities of the children.

During inclement weather a similar program should be carried out in enclosed playgrounds.

Several years ago, a number or reputable architects assisted me in the preparation of plans for one and two story buildings to contain protected playgrounds, such as are shown in the cut.

In towns and the smaller cities and in the suburbs of cities, where land is comparatively inexpensive, a one story building is feasible. In the plans mentioned for a one story building, the general arrangement of the interior is somewhat different from that suggested for a two story building. However, in this, as in the two story structure, the steel framework is so constructed that it furnishes numerous places for the attachment of all sorts of prehensile apparatus. Further, these places for attachment are so arranged for height, distance, grouping and form of attachment that the outdoor playground apparatus can readily be taken from the frames and hung up for use indoors.

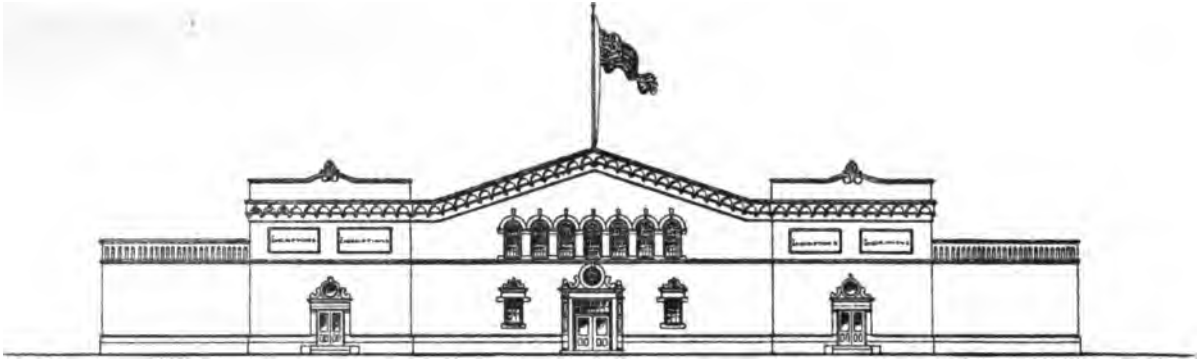


TRANSVERSE SECTION OF A ONE STORY BUILDING.

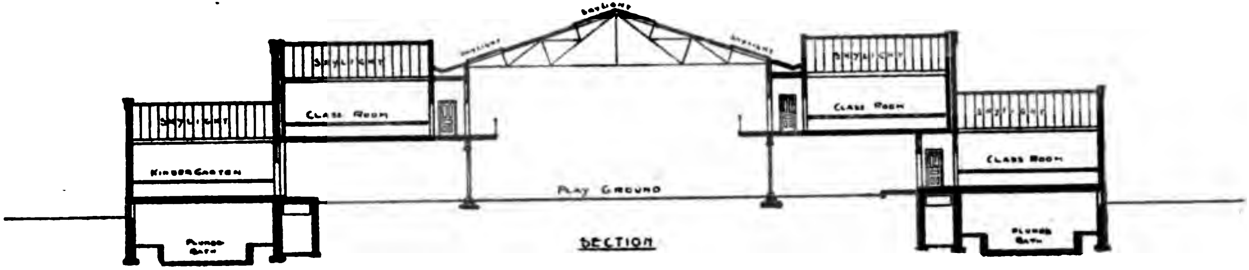
Speaking broadly, the forms of apparatus should be used which long usage have shown to be popular with children, provided they are economical of space. It must never be forgotten that there are large numbers to care for and that the character, amount, arrangement and supervision of the apparatus must be such as to give the largest possible opportunity to the largest possible number.

Swings, traveling rings, climbing ropes and teter ladders have all stood the test and are favorites with children, universally.

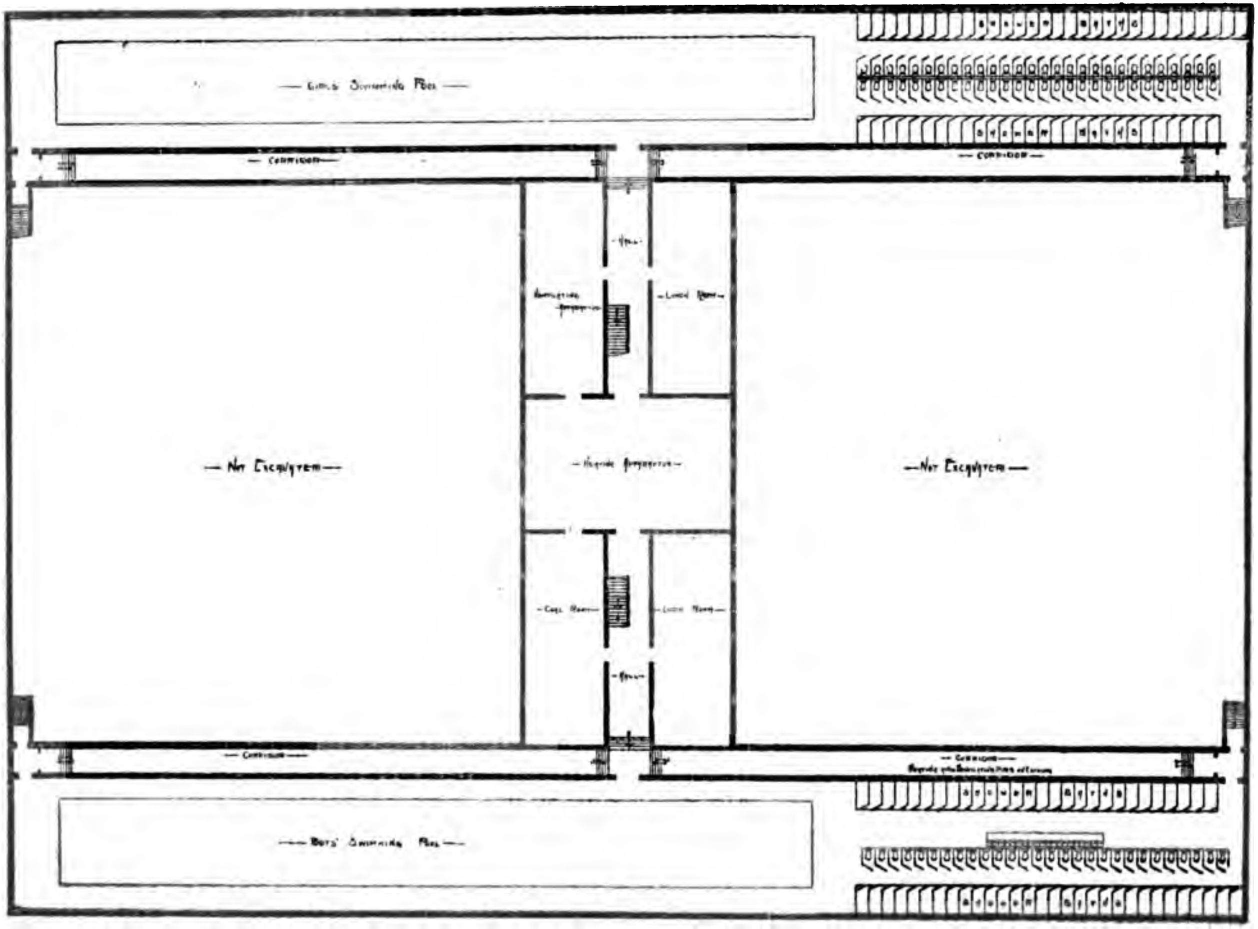
Then, too, this prehensile apparatus is particularly valuable for the narrow chested, crooked backed city child. On these he can swing and climb and straighten his spine and strengthen its



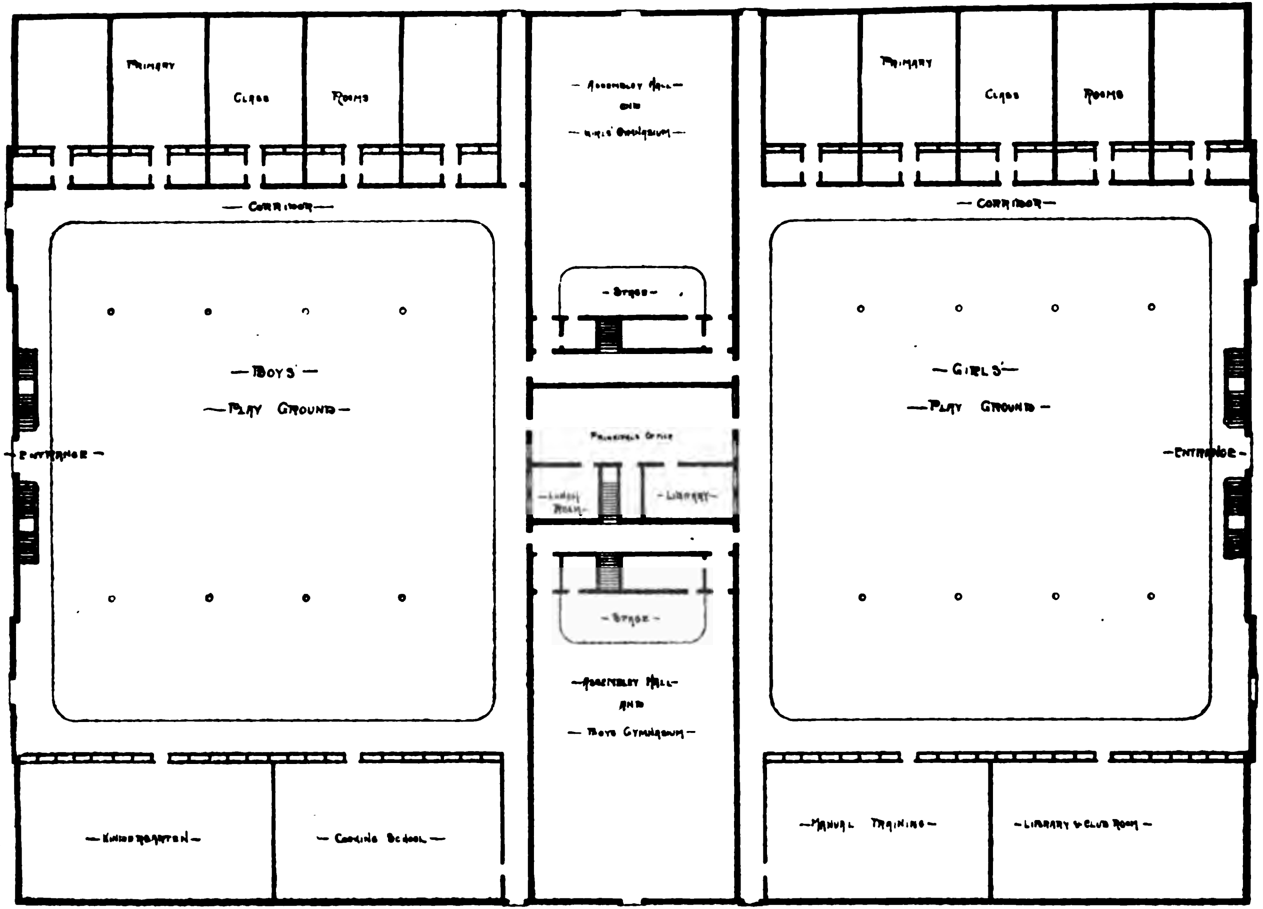
FRONT ELEVATION



SECTION



— Basement Plan —



— First Floor Plan —

muscles until his back will no longer stay crooked even if his desk work does bend him into down curves for most of the day.

The various forms of jumping apparatus should be available for constant use. Other forms, such as the bars, punch bags, big balls, roco and hand ball, can be introduced and used in proportion to the amount of time and space, the skill of the instructors, and the amount of supervision.

In my opinion, the instructors, except for the first four grades, should be men, for in many elementary schools the boys do not see enough of real men.

Instead of burdening the grade teacher with so many special subjects, much to the detriment of both teacher and subject, the program should be lightened in favor of thoroughness and such matters as gymnastics and games should, for the most part, be in the hands of special teachers of these branches.

If necessary, the school day should be lengthened half an hour and the programme re-arranged so that every pupil may have at least a full hour of active play and exercise every day.

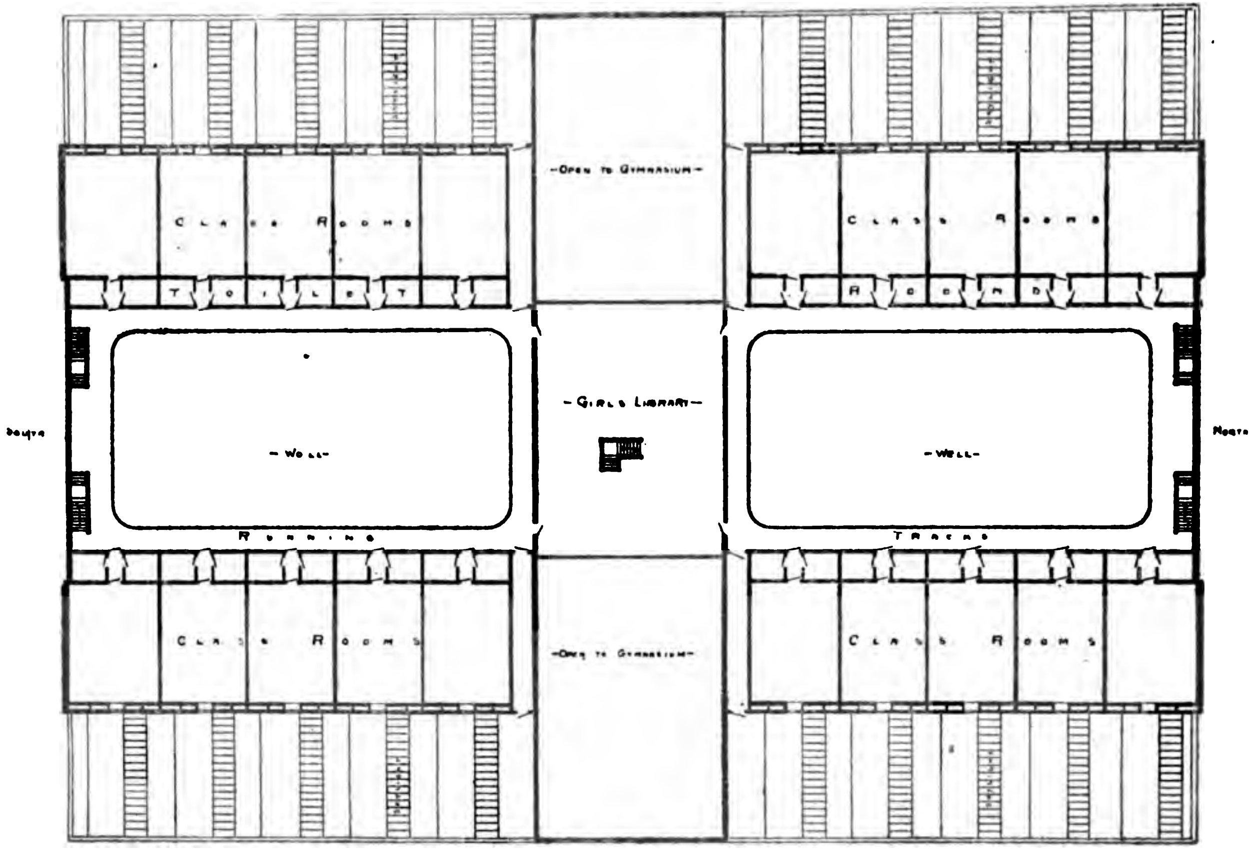
It is an easy matter for a good tactician to conduct gymnastic drills by grades, giving mass class drills in which from one to three hundred pupils participate. With some organization among the pupils much of the work of the ordinary gymnasium can be successfully undertaken on the playgrounds.

In the plans referred to each room is lighted by a large north side skylight as in the case of many of the more recent industrial plants. While these furnish a pure north light for every desk top in the building, shaded skylights are provided for the southern exposure of each room so that plenty of sunlight can be thrown into the rooms during rest and recess periods. Abundant windows and skylights give the mammoth interior hall all the sunlight obtainable. In the lake region we want all we can get. During the 134 half days, mentioned in the weather report, we recorded but 47 during which Cleveland children enjoyed sunshine.

This cut shows the front elevation of a two story building, in which all of the rooms have north side skylights, and in which there are running tracks for each playground on the gallery of the second floor.

The architects' drawings from which this cut was made, certainly show a very handsome front elevation.

The cross section gives a hint as to the very ingenious manner in which the skylights are worked in for a two story building.



—Second Floor—

The architect who drew the plans for the two story building is an ex-superintendent of schools and in sympathy with the idea. This, therefore, is one of the cases in which, "the heart giveth grace unto every art."

In any section of a city where land is expensive a two story building would be considered practicable.

In the basement plans of these buildings it will be noticed that much of the interior ground space is not excavated. A foot of top soil is removed, a concrete basin the size of the playground is constructed and this is partially filled with sand.

In the basement are endless shower baths and long swimming pools lie under the class rooms. As suggested in this—first floor plan—the interior playgrounds for a large school should be large and well equipped in order to be effective.

In the plan for the second, as well as for the first floor, the playgrounds for the boys are separated from those for the girls and gymnasiums for special forms of physical training are also provided.

There is no question in my mind but that public provision for exercise and recreation such as I have suggested will be followed by a much hardier and more vital generation of children than those now within our schools.

To bring all this about it will be necessary to interest practical politicians and get them to feel that the farthering of such state and municipal legislation as will provide the necessary facilities, will please the people—through the children—and thus make votes for themselves. I have seen this very thing happen in connection with our public parks. It will soon be the case that the park authorities, elected by the people, will not be able to secure an election unless they stand in with the "kids."

When I have my way about it we will ship the city children of the grammar grades, each school day, to schools built outside of the city limits on specially prepared school farms. But until we can do this, I shall continue to advocate the largest possible extension of their city playground opportunities for all seasons of the year.

WHAT IS TO BECOME OF OUR "BACKWARD" SCHOOL CHILDREN?*

BY DAVID F. LINCOLN, M.D.

It is only within a very few years that public attention in this country has been called to the existence of large numbers of children in our elementary schools, who, though not strictly imbeciles in the common sense, are yet so defective in capacity that they cannot be taught in ordinary classes.

Different designations have been employed for this class of unfortunates. In England they are commonly known as "mentally feeble." In some of our American cities they are called simply "backward." Permit me to observe, that such designations, referring merely to their low mentality, fail to convey a sense of the danger to the community which their existence brings. The children lack, not merely mental vigor, but the moral traits of judgment, self-control, and orderliness; and the larger part of them, unless watched over, are in danger of eventual moral downfall.

It is of such material as they that our criminals, paupers, tramps, and prostitutes are largely composed. In illustration of this fact I may quote a statement made lately to me by the Superintendent of a boys' reformatory in Massachusetts, who said, that of 300 boys under his charge, about 70 were so dull and backward as to belong more or less to the feeble-minded class.

Germany first saw the necessity of making special provision for these children, and her first "Hilfsclassen" or auxiliary schools were established in 1865; they have been recently reported to contain over 7000 children. The Scandinavian countries and Switzerland have also made efficient provision. The movement began in England in 1892, and has spread rapidly under a permissive Act of Parliament. It began in America in 1894, and has extended to six cities (perhaps more), but has taken in as yet only a few hundred children. Great intelligence has been shown in the introduction of these new classes among us, but the work is yet greatly lacking in extent.

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*An address delivered before the conference of the American Physical Education Association at St. Louis, Mo., August 27, 1904.

By general consent, the number of children so defective as to be unable to derive benefit from instruction in elementary schools is considered to be one per cent. of the enrollment. Upon this basis, one hundred thousand children of this age may be estimated to require special care, as mentally weak or defective, in the United States.*

These children will be found to differ greatly in capacity. A few may be found, on a fair trial, to be normal and bright; a certain proportion may gain a tolerable knowledge of "the three R's," but the great majority are of such low power that at the ages of 8-10 they can learn to write and spell only a single easy word (or less) in a day. Such children, if merely pedagogic reasons were considered, would be best cared for in the classes of our State Institutions for the Feeble Minded. But there are many reasons why they are not sent to these institutions. First, it is often hard to make parents see their children's defects. Teachers, even principals of schools, are often surprisingly ignorant of the presence of such children among their classes; and thus many cases have remained unacknowledged or undiscovered until past the age for improvement—often till they have had their mental disability rightly gauged by the authorities of prisons or reformatories.

There is a second reason for not sending the larger part of these children to State institutions—the lack of accommodation for them in these already overcrowded establishments. These outside children are many times more numerous than those who are cared for in institutions, and institutional provision for the mass of them is not to be thought of at present. It would seem best for those whose family circumstances insure good and watchful care, if found improvable by means of the newly established special classes, to remain under family influences as at present, retaining the benefits of the family tie and of contact with outside life. The influence of teachers, visiting their homes, advising with their parents, and retaining friendly relations for years, counts for much in maintaining a moral influence over the children. The State institution should always stand ready to give admission to those whom their special teachers find too difficult or too imbecile even for the new special class-work.

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*This estimate is based upon the probable number of persons of the elementary school age (say 6-12 years). The estimated number of persons between 5 and 18 being about 28 per cent. of the total population, or say 23 million, those from 6 to 12 may be about half as many, and one per cent. of the latter is 115,000.

A child trained in these classes is first made obedient, attentive, orderly, industrious, polite and law-abiding. In many cases the teacher's work in this direction is very hard; but the success is wonderful. There are two powerful helps to training—the child's natural love of sports, and his natural taste for manual and mechanical occupation. Do not suppose that the chief aim is to make the children scholars. It is the whole child that is worked upon, body and mind, hand and eye, heart, will, and brain. We begin at the bottom, and try to make the dull child walk better, run better, jump, play, aim, throw, catch better; we let him construct things, beginning with kindergarten work, going on through basket work, weaving, sewing, drawing, coloring, modeling, sloyd, giving at least one-half the time to such activities, for the sake of the boy rather than the school program. The hope of returning to ordinary school work can be gratified in but very few instances. The children are not normal, and cannot be made such, although here, as elsewhere in life, exceptional cases may prove to have been only held back by ill health or unfortunate conditions, and may yield an unexpected reward to the teacher. Let me repeat it—the main object is not progress in "the three R's" beyond the most elementary and necessary matters. Children should learn, for instance, to make change. The first of all objects should be to make the child less unlike others in ordinary things; to give him the use of his hands and eyes and limbs; to eliminate the awkwardness and oddity which prejudice people against him; to train him in obedience, self-control, attention; to give him the happiness and the social impulse which his peculiarities debar him from finding, and ultimately to make him fit to mingle with the world, usually under more or less of guardianship.

There is a great deal more than mental defect in most of the cases. A stunted growth of body, clumsy gait, defective speech, deafness, dull features, small or deformed head, general indolence and want of vital energy—such traits as these are seen in great numbers of the feeble-minded. They stand in need of vigorous physical training, both in the form of games, and of all kinds of class gymnastics. The value of such training needs no explanation when we consider the physical poverty of the children. But its effects are not limited to bodily gains; the gymnastics and sports are among the most efficient agencies for stimulating and arousing the attention, will, and self-control which are lacking in these children.

It is important to recognize the fact, insisted upon by our best authorities, that the condition of feeble-mindedness is never strictly cured. The children form a dependent class, and one-half of them (more or less) can never be fitted to become masters of their own destiny. The experience of those who have been handling the large mass of children of this sort in London (nearly 4000 at present) goes to show that about one-third may hereafter contribute materially to their own support, and another third partially so, but that for the rest custodial treatment after leaving school is desirable. Few can earn their own living fully and independently. The most capable "will go through life at a low level, some improving their circumstances, some sinking, much as is found among the ordinary population of which they are a part." The middle third "can do some simple things and earn a little, but not provide for themselves. In many cases, working with fathers and mothers, they are kept usefully employed. Others, without oversight, will become useless burdens, loafers and criminals, always out of the ordinary run of life, and apart from the ordinary population." Of the lower third it is said that "a considerable proportion show little moral restraint, some are almost without speech, some are incapable of work, others work without progress or intelligence; very frequently, too, they are addicted to staying out, or even wandering by night, and many of this last class come into the hands of the police. Many are capable of control while in the special classes, but speedily become irregular and immoral on leaving them."

Girls, if neglected, are liable to drift into the class of prostitutes, which is known to be composed largely of women of feeble intellect. That which leads them in this direction is not so much propensity as an inability to steer themselves. In many cases feeble-minded children show an amiable weakness for kind words and caresses, which, combined with their lack of judgment, makes them an easy prey to flattering offers.

The discipline of the army and navy has been found successful in furnishing a certain needed control for some boys of moderately feeble intellect and marked propensities for wildness.

The question of after-care for the pupils who pass into life from the training in special classes is of the greatest importance.

The number of children taught in these schools, in our country, has been so small that the subject has not yet forced itself upon public attention, as it soon must. The experience of London will be our own; we shall first gather large numbers of defectives into special classes, and improve them; we shall then discover that the improvement, in the majority of cases, has not made them capable of self-direction, and we shall be led to some systematic method of oversight for these graduates. The teachers of our existing "special classes for the backward" are able to inform us of this need, if we do not realize it; and their co-operation will prove exceedingly valuable in giving direction to our efforts.

While in England, the work of after-care has only begun to be organized (as in Birmingham), Germany, with its much longer experience, has already shown what may be done. There is, for instance, a large institutional school at Dalldorf, where boys are taught trades and afterwards placed out as helpers. The head of this institution makes it his business to visit each boy thus placed once or twice a year and examine into his condition. We have from Germany surprisingly high statistics of the self-support attained by the class of the trained feeble-minded, and there is much probability that the after-care ("Fürsorge") is a chief cause of this success.

Our country districts have a similar problem before them; for the imbeciles do not all live in cities. There is a class of the weak-minded who have grown up in rural surroundings, occasionally developing groups or tribes, the pests of the neighborhood; living in beggary and crime and propagating their imbecility. Many such cases are now in print. Dr. Murdoch related one last year. A certain imbecile woman in Western Pennsylvania, in the early part of the 19th century, gave birth to four feeble-minded girls who grew up in neglect, and, roaming about without restraint, became the mothers of fourteen children, mostly illegitimate. The offspring now numbers nearly 100, who are all defective, as far as known, and many are to be found in institutions for delinquents or defectives.

The country has thus its own problem, which is certainly as difficult as that which cities have to solve. The limits of the present paper, however, restrict the discussion to the field of educational work proper, and its complementary work under social organizations; and you will permit me to say in closing that the latter, or what is termed "after-care," cannot be established too soon.

"A STUDY OF POSTURE IN SCHOOL, AS AFFECTED BY SCHOOL-ROOM LIGHTING."

BY GLADYS ABBOTT.

The Sargent Normal School of Physical Education.

When taking measurements of the children of a school in a suburb of Boston, a room was found where a great many of the children carried one shoulder high. This study is the result of an analysis of the conditions found.

The school-house was an old two storied wooden building, to which an addition had been made, cutting off the light from one side of the room, which is on the second story (see Fig. I). The left side of this room is toward the north, which brings the sunlight in obliquely, on the right side by ten o'clock. The room has six windows, about six feet by three feet, lighting a desk space for forty-seven pupils. The front of the room contains four doors, the end doors lead to the dressing-rooms and the two middle doors into the corridors. At the front of the room and to the right is a piano, and all available wall space is filled with blackboards. On a bright day the light in the room is fair, but on a dark day the windows are so few and small that the light is very poor.

In Fig. I, the postures of the children are shown graphically as though the observer was seated at the back of the room. The heavy line represents the level of shoulders, the broken line the lateral curve of spine (trunk). The horizontal line represents the seat. In Fig. II, the rotation of shoulders observed at the same time is shown (the cross representing the high shoulder). The majority of the pupils showed also either round shoulders or round backs, or both. The children with the dots were found, in the measuring to have round shoulders or to carry one shoulder higher than the other.

The room is naturally divided into four areas according to the direction of the light. First, the children who get their light from the two windows in the lower left corner (enclosed in the dot and dash line); second, those from the two windows in the right lower corner (enclosed by the broken line); third, those from the two windows in the right upper corner (enclosed in a straight line); and fourth, the children who had on a dark day no light at all.

Taking the first area mentioned, the light enters at the left from one window on the north and at the rear of the room from one window, the light from the other side windows not being strong enough to penetrate farther than the middle isle at most. The windows are so small that the direct light only comes to the desks opposite windows, therefore the children in order to get the best light lower the left shoulder, lean toward the right and twist toward left. Thus three and four in the first isle turn to the left as well as moving way over to the right of desk, and even the girl directly opposite the window needs to turn a little.

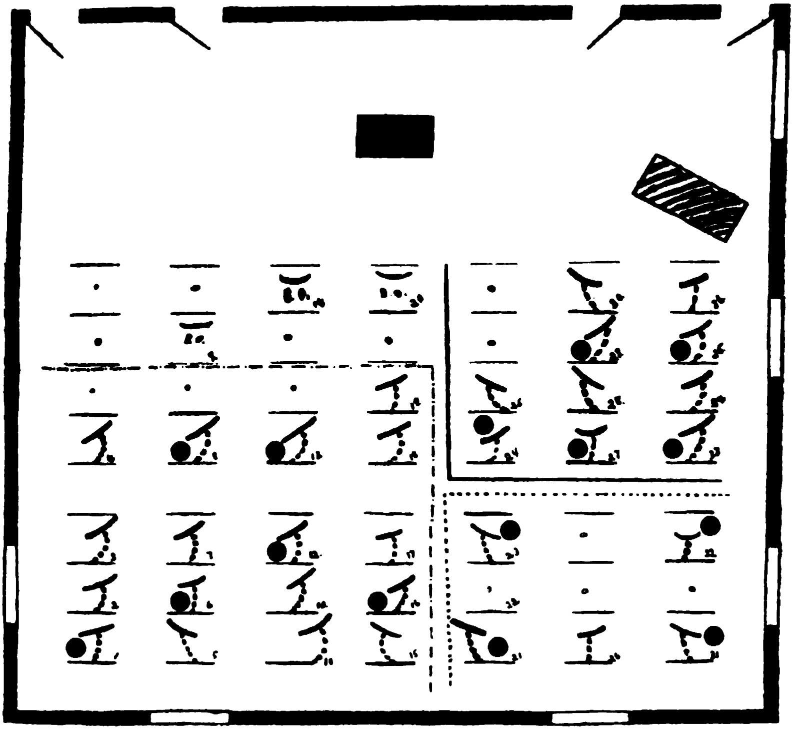


FIG. I.

But in the first seat (5) in the second isle the opposite posture is seen as the light comes from the window at the rear, while the pupil in the second seat (6) has fairly good light and is inclined to keep a good posture.

In the third isle, the first and second children (10 and 11) have practically the same posture, but on account of the better direction of light it is not as marked. The child in the third seat (12) has a lateral curvature corresponding to her sitting posture and although not troubled with poor vision writes with her nose almost touching paper. The boy in the fourth seat (13), when called upon to rise, did so, keeping the same posture as when seated.

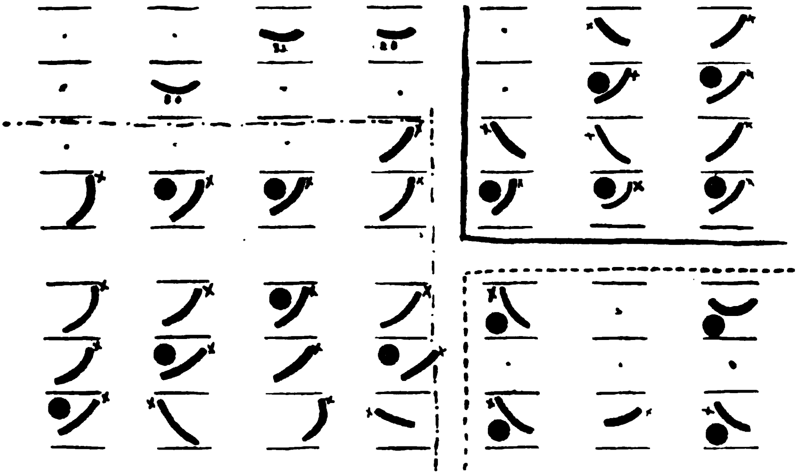


FIG. II.

The children in the middle, as well as those in the farther side of the room, dropped their heads over desks in order to see, but where the light was good they kept straighter, thus six kept a good posture while four bent way over.

In the second area (inclosed in the broken line) the opposite effect is seen, as on a pleasant day the curtains would be down to shut out the sun-light.

In isle five, the first seat (21), corresponds to the first seat (10) in isle three of the opposite section, the difference in posture corresponding to the different incidence of the light. Though the first seat (26) in isle six corresponds to the first seat (5) in isle two, the posture is not as pronounced since the light from the right side is stronger than from the left. The child in the third seat in the last isle (32), although near the window has postural round shoulders and bends way over work.

In this section, containing the best seats, the children bend forward when at work. Strange to say, the best two seats are not occupied.

In the third area the variety of posture is explained also by the direction of light which, coming from the right and front of desk, either shines in the eyes of the children or is very poor.

I tried every seat and found myself taking the same postures as the children in order to write or read.

In the two front seats light was very poor, children bent way over desk in order to see. At the seats with the dots the light reflected into the eyes was blinding, even on a cloudy day. On a sunny day the curtain could be drawn so that the light would not be too strong.

In isle seven, seat five (34), I took exactly the same posture as the child, turning and bending head way over to avoid the light in my eyes.

The fifth child, isle six (28), leans forward and gets in shadow of the girl in front.

The children in the open section (designated by B. O.) wrote with their eyes within a few inches of the paper. There was no inclination to turn to the right or left as there was no better light to be received in one direction than another.

Turning back to the first area, in isle four, seat one, (15), are most interesting conditions: The girl would place her paper upon a certain spot on the right hand side of her desk, slip her body to the left and backward, lowering her right shoulder and turning toward the right, in this position she would write for five or ten minutes, then move her paper to a certain spot on the left and take the same posture, only in opposite direction, returning in a few minutes to the first position. When sitting in a correct posture her shoulders cut off the light from both windows, so in order to get the light she moved her body out of the way. She preferred the posture turning toward right as her strongest light came in that direction. A piece of plain white paper looked gray when moved over her desk, except on those two spots chosen by her to work on. When seated at another desk she took a very good posture. She had not acquired a habitual bad posture, due, perhaps, to her frequent changes.

Seated in front of this girl was a boy known to me outside of school, and whose peculiarity of posture standing and sitting I had noticed growing upon him for the past year. He stands with his right shoulder higher than the left and slightly forward. In school unless he sat with his body to right and back, his left shoulder down and right shoulder forward he shut off the light from his work on the desk.

The following notes were made at the school:

The teacher says, that, "there is much complaint of not being able to see although she makes work put on blackboard extra large and heavy." That, "there is seldom a light day, for in the spring and summer the leaves keep out what light there is, and during the rest of the time they have short days and cloudy weather." Also, that, "during sewing period the girls move to the windows, since they could not possibly see to sew in any of the seats."

Not one good posture in room.

When the children stood to read or recite they keep the same posture as when sitting.

Almost every child bends way over desk when writing, the curve being greatest where light is poorest.

Children who move work to parts of their desks that are lightest also assume positions that allow them to get the best light available.

A child who stood and sat in the same faulty attitude, did not immediately change his position on change of seat, but attempted to sit in old position, finding he could not see there, he would change to the posture characteristic of the seat, changing back occasionally to his old seat posture.

There was no physical exercise to develop a muscular sense of an upright posture.

In the middle isle the light is equal from both sides, but light from left preferred.

When two children exchange seats, they also exchange postures; that is, given a seat, the child coming to it takes the same posture as the child leaving it.

My eyes ached after being in the room forty minutes, and for the first time in years.

Pupils retain the same postures and same seats for one hour and a half with little change.

In this school-room of thirty-five children, fifteen cases of permanent high shoulders (43%) were found, to which if three cases of round shoulders are added gives one half of the room (50%) with fixed bad postures.

This school-room was visited a year later on a sunny day, and I found the new children taking the same positions as those of the year before, though, as the day was bright, the bending over desk was not so pronounced.

The teacher said, "she never asked children to sit straight as she knew it was in a great many cases impossible for them to see if they did."

CONCLUSIONS.

The relation of seat to direction and intensity of light caused the pupils to assume extreme deforming attitudes in order to save eyes.

The posture was in no case determined by any peculiarity of the children.

The faulty postures tended to become measurably habitual in all the children, and were markedly persistent in 50% of them.

I wish to express thanks for the courtesy shown me by all with whom I came in contact while making the study, and especially for the valuable suggestions of Dr. George W. Fitz.

HOW TO CARE FOR A SPRAINED ANKLE.

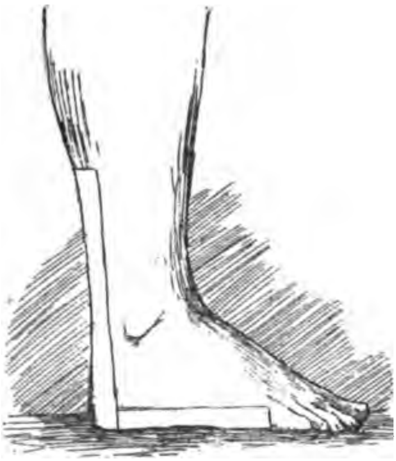
BY DELPHINE HANNA.

Oberlin College.

In the gymnasium and in field sports the accident which is of most frequent occurrence is a sprained ankle. To prevent loss of time to the student from school work, and to get the best results, the ankle should be treated at once. The recovery will be much quicker if the patient is not allowed to bear his weight on the ankle before it is treated. Train students to carry a comrade to a place where he can be cared for.

Have always ready on a tray, an alcohol lamp that will heat water quickly, a pint basin, a bottle of lead and opium tablets, and two yard square pieces. of gauze. When needed for use fill the basin two-thirds full of water and add ten ten-grain lead and opium tablets. As soon as the water is hot, wring out one of the pieces of gauze and apply it to the sprain as hot as it can be borne. In a minute or two replace this with the other piece: keep this up from twenty to thirty minutes. Then place both pieces of gauze around the ankle, cover with oiled silk or waxed paper and bandage loosely. Leave on the moist dressing until the next morning and see that the patient bears no weight on the ankle until then. In the morning massage the leg and ankle. Begin at the knee and work downward with centripetal friction. When the swelling has been reduced as much as is practicable, strap the ankle, using the method described by Doctor V. P. Gibney in the *New York Medical Journal* of February 16, 1895.

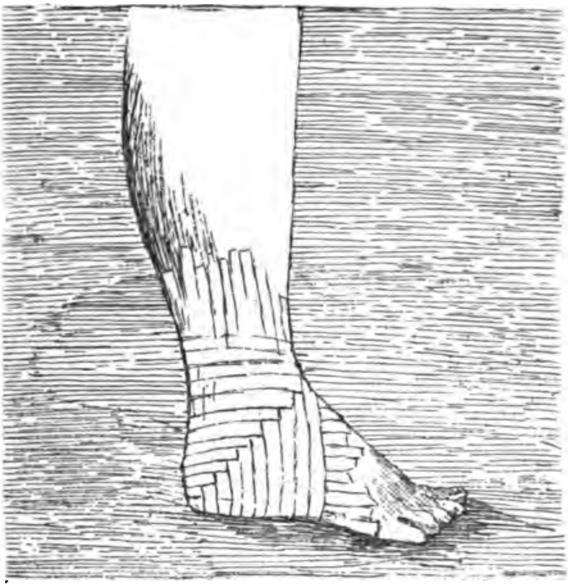
For convenience in handling, cut from a spool of heavy inch adhesive plaster, fourteen or sixteen strips, make one half of them fourteen and the other twelve inches long, and stick them by one end to the back of a chair or the edge of a table. Then with the patient's leg across your knee, have some one hold the foot at a right angle with the leg while you apply the plaster.



Ill. I.

For a sprain about the external malleolus begin at the outer border of the foot near the little toe and carry the strip of plaster around the heel to within an inch of the great toe joint, making the plaster adhere by the warmth of your hand.

The second strip is applied vertically; begin about eight inches above the outer malleolus and far enough back to cover the side of the tendo Achilles, then under the heel and up the other side (Ill. I). Now another strip horizontally overlapping the first about one half, and then another vertical strip overlapping in the same way, and so on until the ankle is covered with the exception of a free space of an inch or two in front, which is left open so that the circulation may not be impeded (Ill. II). To finish put on a few short pieces criss-cross over the point of injury to re-enforce it. Now bandage the foot and ankle with a two-inch gauze bandage to keep the ends of the plaster from rolling up, put on the stocking and shoe, lacing the shoe snugly. After fifteen minutes let the student begin walking. Moderate use helps rather than hinders a recovery. The first time the shoe is taken off the gauze bandage can be removed.



Ill. II.

If the foot was swollen when the strapping was put on, it will be best to put on another in two or three days, as the first one will loosen as the swelling goes down. In moderate cases the strapping can be removed in two weeks. For sprains in other parts of the foot vary the strapping to support the sprain.

In eight years use of this method I have never had a stiff or irritable joint or one that kept the student away from work more than twenty-four hours.

REPORTS OF COUNCIL.

MEETINGS OF THE NATIONAL COUNCIL.

February 4, 1905.

Present: Drs. Gulick, Arnold, Fitz, Mulliner, and Meylan, and Messrs. Hillyer and Prentiss.

Letters were read from Drs. Sargent and Babbitt, expressing their regrets at being unable to attend the meeting.

Dr. C. Ward Crampton, President of the New York Physical Education Society was present through the invitation of President Gulick, because the New York Society is concerned in the plans for the coming Convention, to be discussed at this meeting.

The minutes of the last meeting were read and approved.

The Secretary presented the following report for the year 1904.

Financial Report of the Secretary's Office for the Year 1904.

RECEIVED.	
Cash on hand Jan. 1, 1904	$52 27
Membership dues	1,648 10
Subscriptions to REVIEW	111 55
Back numbers and reprints	132 32
Gift from Boston School of Gymnastics for Publication Fund	100 00
Deficit Dec. 31, 1904	256 52
	$2.300 76

PAID.	
Office furniture	$2 61
Credited to Dr. Fitz, Mr. Bolin, and Dr. Crampton for money paid to them	13 60
Express charges	7 05
Exchange on checks	3 50
To Dr. Fitz for expenses to New York	17 00
Refunded for dues, etc., paid twice	12 00
Stationery	5 48
For packing archives	1 00
Postage	121 35
Rebates to local societies	427 00
Cred. to Pub. Fund	876 79
Secretary's office clerical help account	399 96
Secretary's salary for year 1904	1 00
Paid to Mr. Bolin, Treasurer	412 42
	$2,300 76

The report was accepted.

The Secretary presented the membership report for the year 1904.

Report on Membership, January 1, 1905.

Paid up members	763
Members in arrears for 1904 dues	147
Members in arrears for 1903 and 1904 dues	62
Total	972
Members elected during the year 1904	119

The report was accepted.

The following members were dropped for non-payment of dues:

Bisset, Florence G., 47 Court St., White Plains, N. Y.
Avery, Sarah, Michigan Agricultural College, Lansing, Michigan.
Court, Agnes Lee, 7 Norway St., Boston, Mass.
Amen, Harlan P., Phillips Exeter Academy, Exeter, N. H.
Benham, F. L., 112 Sixth Ave., Cleveland, Ohio.
Babbitt, O. M., Y. M. C. A., Aurora, Illinois.
Bacon, Lillian, 38 King St., Honolulu, Hawaiian Islands.
Barnes, Mrs. A., 847 Carnegie Hall, New York City.
Camann, Mr. H. B., 982 West Harrison St., Chicago, Ill.
Chadwick, Florence, Carrie Wright Seminary, Tacoma, Washington.
Childs, Helen F., M.D., 454 Centre St., Jamaica Plain, Mass.
Conard, Elizabeth, Box 74, Johnstown, N. Y.
Coney, Alice B., 31 East McMillan St., Mt. Auburn, Ohio.
Curtis, Charles P., 40 Fairfield St., Boston, Mass.
Earl, G. H., M.D., 153 Newbury St., Boston, Mass.
Earl, E. C., Box 201, Association Building, Chicago, Ill.
Foster, E. H. T., Box 201, Association Building, Chicago, Ill.
Hogan, Sophie S., 510 West 124th St., New York City.
Kerr, Agnes J., 30 Huntington Ave., Boston, Mass.
Knapp, Marion, 119 Chestnut St., Sewickley, Pa.
King, Mrs. Morris L., 264 West 57th St., New York City.
Lyde, Nellie E., Y. W. C. A., Cedar Rapids, Iowa.
Lyon, May B., 100 Howe St., New Haven, Ct.
Miller, Frank E., Y. M. C. A., Mobile, Ala.
Moores, Frances, 587 Murray Ave., Milwaukee, Wis.
Morris, A. U., Box 201, Association Building, Chicago, Ill.
Morris, Mary Cox, 413 West 46th St., New York City.
Peckham, Ellery G., P. O. 557, Stamford, Ct.
Peet, Walter, M.D., Yonkers, N. Y.
Perry, Florence L., Braintree, Mass.

Richardson, Georgiana, 116 Ashland St., Malden, Mass.
Routzhan, E. G., 1 Sunset Place, Dayton, Ohio.
Russell, Laura S., 13 Woodville Park, Roxbury, Mass.
Sanford, Willard A., 75 Rosette St., New Haven, Ct.
Schlick, Agnes, 1822 Sixth St., Harrisburg, Pa.
Scudder, Mrs. W. M., 604 East Division St., Chicago, Ill.
Smith, Beulah L., 60 West Chestnut St., Rondout, N. Y.
Spiller, A., Weehauken P. O., N. J.
Stephens, Perry J., East Liverpool, Ohio.
Stone, James S., M.D., 234 Marlborough St., Boston, Mass.
Turner, Anita J., 313 Spruce St., Washington, D. C.
Valdes, F. P., 10 St. Philips St., Charleston, S. C.
Whitaker, Grace, Tyngsborough, Mass.
Hanrahan, Miss J. L., 74 West 68th St., New York City.

No report from the Treasurer was presented, owing to his absence from the city.

Dr. Fitz presented the report of the Publication Fund for the year 1904.

Review in account with G. W. Fitz, Editor.

RECEIVED.		PAID.	
Received from Dr. Meylan	$882 79	Editor's office account— Salary	$300 00
Advertisements	331 80	Clerical help	100 00
Interest on deposits	5 10	Postage, etc.	26 72
Subscriptions	26 70	Copyright	4 00
Dues	4 00	Review—	
Advertising bills receivable	16 60	Printing etc., 4 Nos., each 1,400 copies	601 80
		Reprints—	
		300 Beginnings of Modern Physical Train. in Europe	10 80
		200 Harvard Oarsm.	11 25
		Dues transferred to N. Y.	4 00
		Index 1904, Vol. IX.	7 00
		Envelopes for Review	15 00
Total	$1,266 99	Surplus turned to general fund of Asso.	185 32
Less exchange on checks	1 10		
Net receipts	$1,265 89	Total	$1,265 89

The report was accepted.

The Secretary presented reports from the following local societies: Boston, New Haven, Philadelphia, Cleveland, and Oberlin.

The following persons were elected to membership in the Association:

James E. Chadwick, 1819 N. 13th St., Philadelphia, Pa.
H. L. Chadwick, 15th and Chestnut Sts., Philadelphia, Pa.
Leonardo Terone, 3907 Pine St., Philadelphia, Pa.
Fred. W. Harvey, M.D., 3535 Notre Dame St., Montreal, Ca.
E. Elizabeth Tilton, 2031 E. Madison Ave., Philadelphia, Pa.

Phoebe E. Dudley, 1504 N. 55th St., Philadelphia, Pa.
Alice M. Conard, 1801 N. Park Ave., Philadelphia, Pa.
Edith W. Casho, 1708 W. Allegheny Ave., Philadelphia, Pa.
Norma A. Searing, Temple Col., Broad and Berkes Sts., Philadelphia, Pa.
William Hort, 2775 Frankford Ave., Philadelphia, Pa.

Voted, That the surplus from the Publication Fund for the year 1904, be turned over to the general fund of the Association.

Voted, That the present arrangement with the Editor for the publication of the REVIEW be continued for the year 1905.

Voted, That a stenographic report of the transactions of the Convention is not necessary.

Voted, That a limit of $50.00 be placed on the money to be expended for stenographic reports at the coming Convention.

The President, on behalf of the Executive Committee, presented the folowing provisional program for the coming Convention:

PROVISIONAL PROGRAM.

FOR THE CONVENTION OF THE AMERICAN PHYSICAL EDUCATION ASSOCIATION, TEACHERS' COLLEGE, NEW YORK CITY, APRIL 17-19, 1905.*

Monday, April 17.
  9.30 A. M.
    President's Address, Luther Halsey Gulick, M.D.
    Useful dancing from physical training standpoint, D. A. Sargent, M.D.
    Does training in dancing contribute to general grace of carriage and posture? Elizabeth Burchenal, B.L.
    Folk and Classical Dancing, Caroline Crawford.
  2.00 P. M.
    Normal School Section, Dr. E. H. Arnold, Chairman.
    Secondary School Section, Lory Prentiss, President.
    Public School Society, Luther Halsey Gulick, M.D., President..
  8.00 P. M.
    Reception. Addresses of welcome.
Tuesday, April 18.
  9.30 A. M.
    Business Session.
    The dancing foot, Henry Ling Taylor, M.D.
    The feet of dancers, Elizabeth Gordon.
    The teaching of dancing, Melvin B. Gilbert.
  2.00 P. M.
    Anthropometric Section, George Louis Meylan, M.D., Chairman.
    Therapeutic Section, Jakob Bolin, Chairman.

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*For the programs of sections see page 50.

8.00 P. M. (At the Columbia University Gymnasium).
  Public Meeting.
  Exhibit of Dancing.
    Dancing for Elementary Grades, Miss C. B. Gerrish.
    Dancing for High School Girls, Miss E. Burchenal.
    Graded courses in dancing for Public High Schools, Miss Beiderhase and Dr. C. W. Crampton.
    Dancing for College Students, Dr. W. G. Anderson.
  Address.
Wednesday, April 19.
  9.30 A. M.
    Comparative emphasis of dancing for the two sexes, E. H. Arnold, M.D.
    Present status of gymnastic dancing, W. G. Anderson.
    Physique of dancers, D. A. Sargent, M.D.
    The place of dancing in the Providence Y. M. C. A., Oliver L. Hebbert.
  2.00 P. M.
    Dancing Exhibit.
      National Folk Dances, Anderson Club.
      Aesthetic Dancing, by class from Sargent Normal School, led by Mr. M. B. Gilbert.
      Y. M. C. A. Dancing, Providence Y. M. C. A., led by Mr. O. L. Hebbert.
      Women's class from North American Gymnastic Union.
    Illustrated lecture on Jiu Jitsu, R. Tait McKenzie, M.D.
    Demonstration of Jiu Jitsu.
The meeting adjourned.

GEO. L. MEYLAN,
Secretary.

MEETING OF THE EXECUTIVE COMMITTEE, MARCH 1, 1905.

Present: Drs. Gulick, Savage, and Meylan, and Mr. Haug.

The minutes of the last meeting were read and approved.

The Secretary presented the financial report of the Secretary's office for the months of January and February.

Financial Report of the Secretary's Office for January, 1905.

RECEIVED.		PAID.	
Dues	$567 00	Express	$ 50
Subscriptions	39 10	Stationery	94
Back numbers and reprints	3 95	Exchange on Checks	1 50
Deficit, January 31, 1904	95 04	Rebates to local societies	154 00
		Postage	9 75
		Secr. office clerical help account	33 33
		Credited to Pub. fund	248 55
		Deficit to balance December account	256 52
	$705 09		$705 09

Financial Report of the Secretary's Office for February, 1905.

RECEIVED.	
Dues	$270 00
Subscriptions	18 60
Back numbers and reprints	3 45
Balance from Pub. Fund	185 32
	$477 37

PAID.	
To Emanuel Haug, Treas.	$50 00
Express	1 20
Postage	6 47
Credited to Pub. Fund..	107 55
Sec. office clerical help account	33 33
Rebates to local soc.....	92 00
Deficit to bal. Jan. acc't.	95 04
Cash Balance, Feb. 28..	91 78
	$477 37

The report was accepted.

The Treasurer presented the following report:

Treasurer's Report, March 1, 1905.

RECEIPTS.	
From Auditors of former Treasurer's accounts ...	$26 46
From G. L. Meylan, Sec...	50 00
	$76 46

EXPENDITURE.	
Printing	$53 40
Postage	20
Cash on hand March 1...	22 86
	$76 46

The report was accepted.

The following persons were elected to membership in the Association:

W. E. Brown, Pine Bluff, Arkansas.
Katherine B. Campbell, 216 Adelphi St., Brooklyn, N. Y.
Henry G. Carrell, Training School, Springfield, Mass.
Inez Clark, 517 N. Adams St., Ypsilanti, Michigan.
Caroline Crawford, Teachers' College, New York City.
Charles H. Degen, 336 East Houston St., New York City.
Emily Dwyer, Seattle, Washington.
Bailey B. Foster, Training School, Springfield, Mass.
Albert L. Goldsmith, Training School, Springfield, Mass.
A. W. Hendrian, Training School, Springfield, Mass.
Madge S. Jackman, Edinboro, Pa.
Maria Margaret Kelly, 181 Kenilworth St., Cleveland, Ohio.
L. B. Kirkpatrick, Training School, Springfield, Mass.
J. H. Lawson, Training School, Springfield, Mass.
P. W. Lee, Y. M. C. A., Seattle, Washington.
Burton M. Nicholson, Training School, Springfield, Mass.
Ruth M. Oberly, The Mendota, Washington, D. C.
Fred G. Platt, Training School, Springfield, Mass.
Edward A. Ratthei, Training School, Springfield, Mass.
H. H. Reinhardt, Training School, Springfield, Mass.
B. F. Roller, M.D., University Station, Seattle, Washington.

Harriett C. Saunderson, 9 Holyoke Block, Seattle, Wash.
Chauncey C. Shean, Training School, Springfield, Mass.
Emma I. Sisson, Morristown, N. J.
August E. Speidel, Box 443, Seattle, Washington.
Maudie Lorena Stone, 33 Clinton Place, Jamaica, N. Y.
O. E. Warfield, Training School, Springfield, Mass.
Henry H. Wikel, 432 Third Ave., New York City.
J. Wold (Miss), University Station, Seattle, Washington.

After discussion of the program for the coming convention, the meeting adjourned.

GEO. L. MEYLAN,
Secretary.

PROGRAMS OF SECTIONS.

NORMAL SCHOOLS OF PHYSICAL TRAINING.

Monday, April 17, 2 P. M.

Theme for deliberations: Qualifications of candidates for admission to Normal Schools of Physical Training, Dr. E. H. Arnold, Chairman.

1. Moral Qualifications, Miss Amy Morris Homans, Director Boston Normal School of Gymnastics.
2. Mental Qualifications in General, Baroness Posse, Posse Normal School of Gymnastics. Mental Qualifications of Men, Dr. J. W. Seaver, New Haven Normal School of Gymnastics.
3. Physical Qualifications, Mr. Richard Pertuch, North American Gymnastic Union Normal School of Gymnastics. Physical Qualifications of Women, Dr. Geo. L. Meylan, Columbia University.

OF ANTHROPOMETRY.

The assigning of marks for proficiency in Physical Education, Dr. George L. Meylan, Chairman.

The significance of epochs in growth and development, Prof. Franz Boas.

The relative value of strength tests, endurance tests, and medical examinations, in determining physical efficiency, Dr. D. A. Sargent.

Method of assigning marks for proficiency in physical education in the New York City Public Schools, Dr. Luther H. Gulick.

Methods of assigning marks for proficiency in physical education at Amherst College, Dr. Paul C. Phillips.

Results of the work of the Committee on Anthropometry appointed at the Detroit Convention in 1903, Dr. W. W. Hastings.

PUBLIC SCHOOL PHYSICAL TRAINING SOCIETY.

Co-ordination of Pubescence and Scholarship, Dr. C. Ward Crampton.

Comparison of Examinations for Teachers of Physical Training in Public Schools of various Cities of the United States, George W. Ehler.

Topic to be announced: A. E. Kindervater, William A. Stecher.

Are American Boys becoming effeminized by the preponderence of Woman Teachers, Dr. Luther Halsey Gulick, Chairman.

Physical Training in the Public Schools of the United States, Dr. J. H. McCurdy.

SECONDARY SCHOOL PHYSICAL DIRECTORS.

Program: Tuesday, April 18, 2 P. M.

On the Nature of Muscular Fatigue, Robert H. Woodward, Ph.D., Department of Psychology, Columbia University.

A Talk on the Training of Boys in Secondary Schools, Mr. George Goldie, Director of Princeton University Gymnasium.

The Assigning of marks for proficiency in Physical Education, Geo. L. Meylan, M.D., Director, Columbia University Gymnasium.

Credits for Gymnasium Work in Secondary Schools, Mr. E. B. De Groot, Director of Public Gymnasia on Playgrounds in Chicago.

Physical Training at St. Louis, as Related to Preparatory Schools, Mr. James E. Sullivan.

Physical Training in Public High Schools, James H. McCurdy, M.D., Y. M. C. A. Training School, Springfield, Mass.

The Relation of School and College Athletics, Mr. M. C. Murphy, Athletic Trainer at Yale University.

The Ethics of Teaching, Mr. Lory Prentiss, Director of the Lawrenceville School Gymnasium, Chairman.

THERAPEUTIC GYMNASTICS.

Balancing Exercises in Nervous Diseases, Dr. E. H. Arnold, New Haven, Ct.

Motor Training for Ataxia, Dr. H. V. Barclay, New York City.

Spinal Reflexes, Dr. Mary Rees Mulliner, Boston, Mass.

A New Apparatus for use in the Treatment of Scoliosis, Dr. D. A. Sargent, Cambridge, Mass.

Resuming Activities after Invalid States; Remarks on Systematic Guidance in Exercises, Dr. J. Madison Taylor, Philadelphia, Pa.

Recent Observations in Etiology, Prophylixis and Therapy of Scoliosis, Dr. Compton Riely.

JAKOB BOLIN,
Chairman.

New York City.

REPORTS OF SOCIETIES.

BOSTON PHYSICAL EDUCATION SOCIETY.

President, G. W. Fitz,
Secretary, M. Caroline Wilson.

The Society has held eight regular meetings and six business meetings.

The following valuable and interesting papers have been presented: "Recreative Gymnastics," Dr. P. S. Page; "The Foot in Nature and Art," Dr. E. H. Bradford; "Respiratory Movements in Physical Training," Dr. Fitz and Miss M. E. Allen; "The Relative Value of Gymnastic Exercises with or without Hand Apparatus," Dr. M. E. Mulliner and Miss M. J. Seeley; "Hygiene and Physical Training in the Boston Public Schools," Dr. James Fitzgerald and Mr. Ellery H. Clark; "The Social Aspects of Athletics," Dr. Luther H. Gulick.

The last meeting of the year was the annual election of officers and reports.

The work done by the sections in measurements of the backward arm swing was reported by Dr. Fitz, the results of 2000 measurements. Miss Gladys Abbott gave a valuable paper, a "Study of the effects of School Room Lighting on Posture."

The following officers were elected at this meeting: President, Dr. G. W. Fitz; First Vice-President, Miss A. M. Homans; Second Vice-President, Dr. P. S. Page; Treasurer, Miss M. S. Morse; Secretary, Miss M. C. Wilson.

New Members	7
Resigned	18
Total, December, 1904	154

M. Caroline Wilson,
143 Main St., Watertown, Mass. *Secretary.*

CINCINNATI PHYSICAL EDUCATION SOCIETY.

PRESIDENT, DR. JAC. RETTICH.

SECRETARY, META RIEKER, 2628 DENNIS STREET.

The report of the meetings for the year 1904, is as follows:

February 20. Dr. Ziegler was appointed representative on the National Council. Arrangements were made for the exhibit of the World's Fair concerning the pictures of the gymnastic work done in Cincinnati.

Mr. Bishop and Mr. Chez were accepted as new members.

A committee was appointed to revise the constitution of the local society.

Mr. Werner read an article by Dr. Krohn of the University of Chicago.

March 19. Mr. Keller read the revised constitution which was discussed by members.

The acting officers, Dr. Ziegler, President, and Meta Rieker, Secretary, were asked to continue in office until the October meeting.

October 8. New officers elected: Dr. Rettich, President, Meta Rieker, Secretary and Treasurer, and Dr. Ziegler, National Delegate of the Council.

It was decided to keep the total rebate of the dues in the treasury. A circulating library was established on which a certain per cent. of the rebate is expended.

In connection with the recently adopted constitution, a librarian was appointed with duties of buying and distributing the books.

November 19. The program consisted of a discussion of the physical training work seen at the World's Fair.

December 27. Dr. Rettich read a paper on "Athletics in the High Schools."

META RIEKER,
Secretary.

THE CLEVELAND PHYSICAL EDUCATION SOCIETY.

President, DR. LEIGH K. BAKER,
Secretary-Treasurer, MR. S. E. SWANBECK.

Meetings of the Cleveland Physical Education Association were held Dec. 18, Jan. 30, April 8, and May 28. Dr. L. K. Baker acted as President and Mr. S. E. Swanbeck as Secretary and Treasurer.

At the first meeting the following papers were read: "The Duty of the Municipality with Reference to Playgrounds," Rabbi Moses G. Gries; "What should be done for Physical Training Through the Public Schools," Dr. G. C. Ashmun; "The recent Temperance Movement in Europe," Dr. T. H. Lohman.

The following resolution was adopted by the Association:

RESOLVED, That the Cleveland Physical Education Association here assembled, heartily commends the policy of the Board of Public Service in providing numerous places for skating for the children of the city, that a copy of this resolution be sent to the Secretary of the Board of Public Service, and that the resolution be entered in the minutes of the Association.

At the second meeting, an interesting paper, entitled "Physical Training in the Schools of Germany and Sweden," was read by Dr. Fred E. Leonard, Director of Physical Training in Oberlin College.

At the conclusion of Dr. Leonard's address, a general discussion of the paper was held. A number of questions were asked Dr. Leonard concerning general school conditions in Germany and Sweden, in comparison with those existing in this country.

THE THIRD MEETING.

The Cleveland Physical Education Association held an interesting meeting at the Central Y. M. C. A. Friday evening, April 8, 1904. The attendance was unusually large. After a banquet, which was served in the café, the members adjourned to the club rooms on the second floor.

An interesting program of three-minute papers on the present and future of physical training in Cleveland was the feature of the meeting.

PROGRAM.

The Symposium on the Present and Future of Physical Training in Cleveland.

Physical Education in Institutional Gymnasiums.	
The Churches	Mr. Fred Isaac.
The Social Settlements	Mr. W. A. Miller.
The Young Men's Christian Association	Dr. W. H. Kinnicutt.
The Young Women's Christian Association	Miss Fannie Mairs.
The Boys' Associations	Mr. Sam. Zechar.
The Turnvereins	Dr. Karl Zapp.
Western Reserve University	Prof. John Dickerman.
Secondary Schools.	
West High School	Mr. Henry Luther.
Lincoln High School	Dr. George Fischer.
East High School	Mr. S. E. Swanbeck.
University School	H. S. Anderson.
Mittlcberger School	Miss C. W. Elliott.
Interscholastic Athletics	Mr. Irvine Garbutt.
Elementary Schools.	
Calisthenics	Miss C. L. Norton.
Playgrounds	Miss L. L. Campbell.
Playground Discussion	Miss Annie Robinson.
School Gymnasiums	Miss Clara Mayer.
The Public Parks	Mr. Daniel Leslie.
The Need of Extension	General Discussion.

The meeting was then called to order by the President, Dr. L. K. Baker.

The Secretary presented the names of twenty-eight applicants for membership in the C. P. E. A. On motion, the Secretary was authorized to cast the ballot of the Association for their election to membership in the C. P. E. A.

The following motions were passed:

I. Thanking the visitors for the papers read.

II. Empowering the President to appoint committees as follows:

Committee on Articles of Association.
Committee on Extension.
Committee on Membership.
Committee on Outing.

III. That the Council of the C. P. E. A. consist of the officers of the association together with the chairman of the various standing committees.

IV. That the Council act as the committee on publication.

V. Thanking the Young Men's Christian Association for the use of club room.

VI. Endorsing the action of the Committee on Legislation.

The report of the Committee on Legislation of the C. P. E. A. was endorsed by a full vote of the Association.

Some time ago this committee, of which Dr. G. C. Ashmun is chairman and Dr. H. A. Marvin and Mr. Geo. Foster (attorney) are members, addressed letters to the chairman of the House and Senate committees on common schools recommending that the physical training law be retained in the new school code and so amended as to place physical training on the same basis as manual training, German, music and other special branches of elementary education.

On motion of Dr. Zapp, a resolution was passed, requesting the members of the Cuyahoga delegation to stand for the retention of the law relating to physical training, amending it as suggested by the State W. C. T. U.

Respectfully submitted,
S. E. Swanbeck.

The fourth meeting of the year consisted in an outing.

S. E. Swanbeck,
212 Crawford Road, Cleveland, O. *Secretary.*

THE SOUTHERN MICHIGAN PHYSICAL EDUCATION SOCIETY.

President, W. P. Bowen,
Secretary, Harriet B. Saxe, 61 Madison Ave, Detroit, Mich.

The Southern Michigan Physical Education Society has held during the past year, four meetings, as follows: March 12, in the

Normal College Gymnasium, Ypsilanti, the following program was given:

Paper:—"The Motor Ability of the Child," Prof. C. O. Hoyt, Department of Psychology, State Normal College. Discussion by Prof. Bowen, Mrs. Burton and Miss Ronan.

Review:—Baroness Posse's paper on "The Value of Competitive Gymnastics," Dr. Alice G. Snyder, University of Michigan. Discussion by Miss Ronan and Miss Parmater.

Report of members of National Council.

May 19, in the Y. M. C. A. Building, Detroit, there was given the following program:

Paper:—"Playgrounds," Mrs. Clara Arthur, Detroit. Discussion by Mr. Lane.

Paper:—"School Hygiene," Dr. Keefer, of Detroit.

Paper:—"The Eye," Dr. Parker, University of Michigan.

October 15, in the Assembly Room of the Training School, State Normal College, Ypsilanti, Mrs. Arthur, by request, repeated her paper before nearly 400 students of the college, who, within a year or two will fill positions as teachers.

January 28, in Barbour Gymnasium, Ann Arbor, an informal meeting was held at which the following officers were elected for the coming year: President, W. P. Bowen, Ypsilanti; Vice-President, Keene Fitzpatrick, Ann Arbor; Secretary and Treasurer, Miss Harriet Saxe, Detroit; Member of Council, Dr. Helen Brooks, Ann Arbor.

This being a postponed meeting for 1904, time was taken for discussing plans for the coming year.

During the past year, the Society has lost two efficient members, who have gone to other fields, Dr. Alice G. Snyder, now Mrs. Thompson of New York City, and Mr. W. R. Hacket, who has taken up work in the East, but it is hoped that new members will come in to take up their work.

FANNIE CHEEVER BURTON,
Secretary.

NEW HAVEN PHYSICAL EDUCATION SOCIETY.

President, LOUIS LEYERZAPF,
Secretary, ETHEL R. WEEDEN.

The February meeting of the New Haven Physical Education Society was held in Herrick Hall (Yale Psychological Laboratory) on February 9, 1904. Dr. Thomas M. Balliet, Superintendent of public schools in Springfield, Mass., addressed a large and appreciative audience on the subject, "Some Psychological Aspects of Physical Training."

The business meeting and annual election of officers was appointed to be held at the New Haven Normal School of Gymnastics (307 York Street), on Tuesday morning, February 16, 1904, at 11.30 o'clock.

President Louis Leyerzapf announced that the following course of lectures had been arranged:

Thursday evening, March 3, 1904. Dr. W. G. Anderson—illustrated lecture—Physical Training in Different Parts of the World.

Friday evening, March 25, 1904. Dr. Stanley G. Hall, President Clark University—Muscle Culture and Brain Building.

Friday evening, April 22, 1904. Dr. J. W. Seaver—The Growth of the Human Body.

Friday evening, May 13, 1904. Mr. Anton H. Müller—Practical Massage. (Illustrated with subject.)

A business meeting of the New Haven Physical Education Society was held in the lecture room of the New Haven Normal School of Gymnastics, February 16, 1904. Minutes of the last meeting read and approved. Letter from Mr. Andrew Phillips, tendering use of College Street Hall, and place in the University Lecture Course, for the lecture of Dr. Hall, was read. Names of new members read and accepted.

Following officers elected for the ensuing year: President, Mr. Louis Leyerzapf; Vice-President, Dr. Boynton; Secretary and Treasurer, Ethel R. Weeden.

Members of the Council elected: Dr. E. H. Arnold, Dr. J. W. Seaver.

Meeting adjourned.

A meeting held on Thursday, March 3, 1904, in the Yale Gymnasium trophy room, was well attended and was addressed by Dr. J. W. Seaver, his subject being, The Growth of the Human Body. The lecture, illustrated by a graphic chart, was interesting and instructive.

On March 25, 1904, in the College Street Hall, Dr. Stanley G. Hall lectured on Muscle Culture and Brain Building. The lecture had been added to the University Extension Course, and a large audience listened to an interesting discourse.

On April 22, 1904, in Herrick Hall, Dr. W. G. Anderson, Director of Yale Gymnasium, lectured on "Physical Training in Different Parts of the World," using about 100 slides for illustration.

E. R. Weeden,
Secretary.

307 York St., New Haven, Conn.

PHYSICAL EDUCATION SOCIETY OF NEW YORK AND VICINITY.

President, C. Ward Crampton, M.D.,
Secretary-Treasurer, Caroline M. Wollaston, 282 Jefferson Avenue, Brooklyn, N. Y.

The Physical Education Society of New York and Vicinity. held afternoon meetings on the third Saturday of each month, during 1904, except June, July, August and September. The following papers were presented:

"The Scope of Physical Economics," J. Madison Taylor, M.D., Philadelphia.

"Posture," J. Madison Taylor, M.D., Philadelphia.

"Recent Investigations as to the Influence of Various Gymnastic Procedures on the Blood," C. Ward Crampton, M.D., High School of Commerce, New York.

"The Mechanics of the Pelvic Organs in the Female, and their Bearing on Gymnastics," E. H. Arnold, M.D., New Haven Normal School of Gymnastics.

"The Muscle Bed and its Practical Application," W. G. Anderson, M.D., Yale University.

Report of Committee on Footwear for the Gymnasium.

"Physical Efficiency of Civilized and Primitive Peoples at the St. Louis Exposition, Luther H. Gulick, M.D., Director of Physical Training in Greater New York Public Schools.

Physical Training and Athletics in the Young Men's Christian Association, George J. Fisher, M.D., Brooklyn Y. M. C. A.

The annual meeting was held in December, and the following officers elected: C. Ward Crampton, M.D., President; William Skarstrom, M.D., First Vice-President; Alberta J. Cory, Second Vice-President; Caroline M. Wollaston, Secretary-Treasurer.

Additional members of Executive Committee: Montague Gammon, George J. Fisher, M.D., Edith T. Robinson, Cora B. Clark.

The Secretary reported that 43 new members had been added to the roll, making a membership of 232.

In April, 1904, a year book was issued, containing a brief history of the Society, its by-laws, list of officers, and members, their addresses, present positions, and dates of graduation from college, professional school, and normal school of physical training.

Caroline M. Wollaston,
Secretary-Treasurer.

282 Jefferson Avenue, Brooklyn.

During the past year, the Oberlin Society has held four meetings. In December, 1903, the Society met for the first time, and elected its officers. On the fourth of February, Dr. Zapp, of Cleveland, addressed the Society, taking for his subject, the Nuremberg Turnfest, in which he had participated. He was full of the enthusiasm and enjoyment of the meeting, and gave the Society a good account of the nature of such occasions and the manner in which they are conducted.

Mr. H. B. Reed, a teacher in the Men's gymnasium at Oberlin, talked to the Society on April 25th. He took up the question of the New York playgrounds in which he had taught the previous summer. The problems connected with the playground movement were clearly set forth. At the last meeting, the Society spent a very profitable evening with Mr. G. W. Ehler, supervisor of Physical Training in the Cleveland Public Schools. Mr. Ehler talked to the Society for more than two hours, on the plans which he has for physical training in the public schools, going into the details of the method by which he hopes to secure the desired ends. He discussed all phases of the work, formal gymnastics, plays and games, ventilation, and hygiene, playgrounds and rooms for gymnastic work. He talked at length of the ways and measures which he has inaugurated, by which he is able to keep in close touch with all the work done in each school.

The Society has had an enrollment of fourteen during the past year.

PHILADELPHIA PHYSICAL EDUCATION SOCIETY.

President, C. E. Ehinger,
Secretary, Evaline Young, Girls High School.

The Philadelphia Physical Education Society, during the winter of 1903-1904, held four meetings. The membership of the Society is 67 and the average attendance for the four meetings was 48.

Geo. M. Gould, M.D., editor of Gould's Medical Dictionary and editor of American Medicine, gave a practical and helpful talk on "Diagnosis of Eye Strain, by the Teacher."

The paper of R. Tunstall Taylor, M.D., Surgeon, in Charge of the Hospital for Crippled and Deformed Children, Baltimore, on "Lateral Curvature," and the paper of Seneca Egbert, M.D., Professor of Hygiene, Medico Chirurgical College, on "School Hygiene and the teaching of Hygiene in Public Schools," have appeared in the Physical Education Review.

DeForest Willard, M.D., Orthopædic Surgeon, University of Pennsylvania, gave an instructive talk on "Flat Foot."

Miss Blanche E. Treat, Chairman of the Nominating Committee, at a meeting on May 7, 1904, read the following report, which was accepted by the Society:

President, C. E. Ehinger, M.D., State Normal School, West Chester; First Vice-President, Felicia Thomas, State Normal School, Trenton, N. J.; Second Vice President, James A. Babbit, M.D., Haverford College; Treasurer, Adele Adams, Friends' Select School, Philadelphia; Secretary, Evaline Young, Philadelphia High School for Girls.

Council:—Lunette Garlock, Bryn Maur College; Rachael P. Barker, Philadelphia High School for Girls; Maude G. Hopkins, Drexel Institute.

Through the courtesy of President James MacAllister, all meetings of the Society are held at Drexel Institute.

Respectfully submitted,

EVALINE YOUNG,
Secretary.

ST. LOUIS' PHYSICAL EDUCATION SOCIETY.

President, MR. A. E. KINDERVATER,
Secretary, MARY HOGAN LUDLUM.

We have four regular meetings a year, on the first Saturdays in October, December, February and April. In our April meeting, Mr. Wm. Stecher gave a very interesting paper on "What the American Gymnastic Union proposed to do at the World's Fair." At the same meeting, a paper on "Physical Culture, Then and Now," giving a history of gymnastics from the early Greeks and Romans to the present time, and showing the points of contrast, etc., was given by Mrs. Ludlum.

Our October meeting was not held on account of the Fair.

In June, our Society met with a great loss, through our President, Wm. Stecher, being called as Supervisor to the Indianapolis Public Schools.

In December the meeting was presided over by the Secretary, and Mr. A. E. Kindervater was elected President. Dr. A. F. Kennedy, Vice-President; Mrs. Mary H. Ludlum, Secretary; Mr. Otto F. Koenig, Treasurer.

Since our last report we have received four new members.

At our December meeting we were favored by a visit from Mr. Flack of Milwaukee, who is connected with "Mind and Body."

MARY H. LUDLUM,
Secretary.

4452 W. Belle Pl., St. Louis. February 1, 1905.

EDITORIAL NOTE AND COMMENT.

The annual reports of the Association's affairs show a very prosperous condition. A total income of over $2,000 with rebates to Societies of between $400 and $500 leaves a net income of over $1,500. While this increase of income is mainly due to the change of membership dues from $1 to $2 per year, it is in part due to an actual increase in the number of members, of advertisements in the REVIEW, of subscriptions and sales of back numbers, reports and reprints. With this increased income we are much nearer the goal for which all have hoped, that of having an association which attracts and holds all those closely interested in physical education matters.

The REVIEW has passed another milestone on its way to becoming the ideal organ of such an Association. The following table gives some idea of its growth in appreciative recognition from its inception to the present time. If more than this is necessary to demonstrate its superiority over the old method of publishing the transactions of annual conventions, a careful study of its tables of contents should be convincing since their richness and value can admit of no dispute.

Proceedings.	Dues $1.00. Pages.	Am. Phy. Edu. Review	Dues $1.00. Pages.
1885	8	1896 Vol. I	128
1886	35	1897 Vol. II	264
1887	52	1898 Vol. III	323
1888	56	1899 Vol. IV	396
1890	86	1900 Vol. V	375
1891	127	1901 Vol. VI	338
1892	264	1902 Vol. VII	250
			Dues $2.00.
1893	66	1903 Vol. VIII	316
1894	154	1904 Vol. IX	326
1895	242		

That the REVIEW has been in the main successful in serving the Association is evident. That it has been, however, weak in its service to certain lines of physical education is also noticeably true, and the practical question arises how can this unevenness of service be remedied. The critiscism is frequently made that the REVIEW is too scientific, that it does not appeal to the "practical" teacher of gymnastics because it does not give such a teacher what he most needs, that is,—practical class work. The criticism is also made that the REVIEW should contain more of news and should advise of changes and vacancies in physical education positions. That these functions of the REVIEW are important and desirable admits of no question. As editor of the REVIEW I have found, however, the utmost difficulty in getting practical papers for its pages. There seems to be a strong objection to giving away a good drill, day's order or other form of gymnastic feature lest others should be given an advantage and thereby made equal to the writer. The scientific spirit of publishing truth as early as possible even for the purpose of establishing priority or with the idea of self advertisement does not seem prevalent among physical educators. The stimulus of free publication is important both for the teacher and the cause. To the teacher it brings the exhilaration of success, the incentive to greater accuracy of thought and of execution through consciousness of the criticism to which his work will be subjected, and finally well-earned recognition and fame. To the cause it means progress and success.

Because of the absence of a convincing mass of scientific literature as the acknowledged result of physical training activity, and because of the predominance of systems and sects in its practice, physical training has failed of full recognition on the part of the medical and other professions. It is therefore incumbent upon us to develop as rapidly as possible a consistent and authoritative physiology and hygiene of physical training. We have the investigators and writers, the material for study and means of publishing results. Can we not then produce a convincing literature which will compel recognition? Can we not develop such unity of effort and scientific method of study as will result in an essential agreement upon that physiology and hygiene which must form the basis of our work? The time has passed when it can be in the slightest degree desirable to claim for any narrow system exclusive inspiration as to truth or value or interest. Such a claim to-day merely serves to show the narrow training and bigoted ignorance of the incompetent teacher.

The American Physical Education Association has occupied a unique position in uniting, superficially at least, most of the warring systems of physical training into a combined membership. This, however, has led to a sacrifice of the fullest freedom of discussion of mooted topics and therefore has tended to retard the progress and the scientific recognition of physical training, although fortunately not to the same degree that the general activity of the Association has favored it. However, it seems now as if the time were ripe for the Association to enter upon a campaign for the establishment of a scientific system of physical training. Of the possibilities of this, I am convinced, for the reason that the normal schools have been sending out graduates so much better prepared in anatomy, physiology, hygiene and animal mechanics, that they are better able to appreciate truth and to free themselves from the narrow prejudice which has sometimes masqueraded in its guise.

THE AMERICAN PHYSICAL EDUCATION REVIEW, as I conceive it, from its very position as the organ of the Association, should be the medium for the expression of all sides and aspects of physical training problems, and I hope to see its pages fairly boiling with enlightening controversy. Then let no one wait or hesitate after the happy solution of a puzzling problem, the successful treatment of an interesting case, the synthesis of a well-balanced drill or day's order, the illuminating analysis of plodding statistical study, the reading of an especially valuable article or the learning of some bit of suggestive news, but let him sit down and write out a short, clear, simple, comprehensive and truthfully adequate statement which will tell the two or three thousand readers of the REVIEW all about it. Then let him send it to the REVIEW in full consciousness that he has done his duty by the cause, by the Association, by himself and that a complete return will come to him for his generous sacrifice.

The future of the Association and of the REVIEW is wholly in the hands of the individual members. The democrative co-operative basis of our organization means that each must give in the same measure that he expects to receive. In order that the Association may mean much to us we must be ready to do much for it; thus only can the best success come.

The biennial convention of the American Physical Education Association is to be held in New York, April 17, 18 and 19, under the new Constitution adopted at Detroit two years ago. As a matter of history, it is interesting to note that the vote by which the new Constitution was adopted was illegal, since it was carried by the individual votes of all members present and not by the constitutional method of voting by delegates from societies and members at large. In other words, for the time being, the Constitution under which the Society was then organized, was illegally suspended for the purpose of passing a new Constitution. The Constitution thus adopted gives full voting power to the individual members present at any convention and makes no provision for the representation of the full strength of societies through delegates. While this change may be highly desirable from some points of view, it is a menace to the well being of the Association in that it permits the general voice of the Association to be overwhelmed by a convention vote made up of the local contingent of the Association. which would naturally be fully represented.

We find the same method existent in the present organization of the National Council in that each society, no matter how large or how small, has one delegate only to represent it, "and enough additional persons to make a constant working body of five in the territory in which the National Council has its headquarters. These additional persons shall be elected by the Council. They shall be known as the Executive Committee." Owing to the time and expense of travel, etc., the National Council resolves itself essentially into a local governing body for the Association.

By the former constitution which was abrogated at Detroit, each society had a representation proportioned to its membership. A society with 150 members had 150 votes, and its delegates could be instructed by the society as to how those votes should be cast. The delegates thus were true delegates and the society had a democratic representation.

Our Association is so widely scattered, so many of its members can ill afford the expense and time necessitated by attendance at council meetings or conventions, that as a result of this system of personal voting, the convention is under the essential control of a local body. It is unnecessary to point out the possibilities and dangers that may result from this form of constitution and it is to be hoped that steps will be taken to modify it.

Addresses Wanted.

Miss Mariea Annin, Miss Edna P. Carret, Miss Margaret Cooke, Miss Harriet E. Trask, Miss May White. Members who know the address of any of the persons named above are requested to send it to Dr. Geo. L. Meylan, Secretary, 420 West 160th St., New York City.

NEWS NOTES.

The National Educational Association will hold its Forty-fourth Annual Convention at Ashbury Park and Ocean Grove, N. J., July 3-7, 1905. President, W. H. Maxwell; Secretary, Irwin Shephard, Winona, Minn.

The American Institute of Instruction will hold its Annual Convention at Portland, Me., July 11 to 14, 1905.

Playgrounds and Small Parks for New York. At a meeting of the Board of Estimate and Apportionment held Feb. 17, 1905, $1,000,000 was appropriated for new playgrounds, and nearly $3,500,000 for small parks in the boroughs of Manhattan, Bronx, Brooklyn and Queens.

The Executive Committee of the German Turnerschaft has decided to send to the Twenty-ninth National Gymnastic Festival of the North American Turnerbund, to be held June 21-25, 1905, in Indianapolis, a squad of eight of the best turners in the Turnerschaft, under the leadership of Professor Fritz Kessler, Chairman of the Technical Committee and Director of the Royal (Württemberg) Normal School of Gymnastics in Stuttgart. This is the first time the Turnerschaft has ever been officially represented in such a manner at an American *Turnfest*.

F. E. L.

Sir T. Lauder Brunton is energetically developing, in England, a "National League for Promoting Physical Education and Improvement"—constituted to secure the organized co-operation of all existing associations and persons engaged in the promotion of these efforts, especially physicians and medical officers of health.

ST. LOUIS EXPOSITION DEPARTMENT OF PHYSICAL CULTURE.

Jury Report: Summary of Awards.

United States, Superior Prize, 1. Grand Prize, 1.

	Gold.	Silver.	Bronze.
United States	16	26	53
Germany	7	6	32
France	6	6	3
Belgium	0	0	8
Brazil	1	0	0
Canada	1	1	0
Mexico	0	1	0
Japan	0	3	0
England	0	0	1
	31	42	97
Total		171	

Superior Prize: Messrs, A. G. Spalding & Bros.
Grand Prize: A. G. Spalding & Bros.

UNITED STATES.

Gold Medals.

1. Dr. and Mrs. Luther Halsey Gulick. 2. New Haven Normal School of Gymnastics. 3. North American Gymnastic Union. 4. Amherst College. 5. Chicago Public Schools. 6. University of Chicago. 7. Culver Military Academy. 8. The Posse Normal School of Physical Training. 9. Smith College. 10. Dayton Y. M. C. A. 11. American Sports Publishing Co. 12. Standard Sanitary Manufacturing Co. 13. Greater New York Public Schools. 14. Chicago Central Y. M. C. A. 15. University of Pennsylvania Orthopædic Hospital.

Silver Medals.

1. Henry Suder. 2. Joseph E. Raycroft. 3. George W. Ehler. 4. Miss Senda Berenson. 5. Cincinnati Public Schools. 6. University of Minnesota. 7. Missouri Athletic Club. 8. University of Missouri. 9. Oberlin College Teachers' Course. 10. Phillips Exeter Academy. 11. University of Wisconsin. 12. Seattle Y. M. C. A. 13. The Illustrated Sporting News. 14. The Chicago Institute and Training School of the Y. M. C. A. 15. Dr. Edward Hitchcock. 16. W. E. Day. 17. George Brozius. 18. A. E. Kindervater. 19. F. C. Breakspear. 20. Milton B. Reach. 21. Horace Brown. 22. Harry W. Marion. 23. Whitley Exerciser Co. 24. Dr. Luther Halsey Gulick.

Bronze Medals.

1. Andover Academy. 2. Bowdoin College. 3. Carlisle Indian Industrial School. 4. Michigan State Normal School. 5. University of Michigan. 6. Oberlin College. 7. Cincinnati Y. M. C. A. 8. Wellesley College. 9. St. Louis Amateur Athletic Association. 10. St. George's Athletic Club. 11. John T. Doyle. 12. Hugh S. Quinn. 13. F. G. Lawrence. 14. Walter Camp. 15. Henry Chadwick. 16. George T. Hepbron. 17. Frederick Toombes. 18. Twenty-second Regiment N. Y. N. G. 19. Schools of New York City. 20. Schools of Chicago. 21. Schools of Louisville, Ky. 22. Y. M. C. A., Buffalo, N. Y., Central Department. 23. Y. M. C. A., Baltimore, Md., Central Department. 24. Y. M. C. A., Cincinnati, Ohio. 25. Y. M. C. A., Washington, D. C. 26. Y. M. C. A., Chicago, Ill. 27. Y. M. C. A., Boston, Mass. 28. Y. M. C. A., Dayton, Ohio. 29. Y. M. C. A., New Haven, Conn. 30. Albion College, Albion, Mich. 31. Amherst College. 32. Columbia University. 33.

Dartmouth College. 34. Kentucky University. 35. New England Intercollegiate A. A. A. 36. University of Chicago. 37. University of Nebraska. 38. West Point Military Academy. 39. New York Athletic Club. 40. Star Athletic Club. 41. Brookline Swimming Club. 42. Xavier Athletic Club. 43. Detroit Boat Club. 44. University of New Mexico. 45. Rutgers College. 46. Philadelphia Normal School of Physical Training of the Temple College. 47. Y. M. C. A., Boston, Mass. 48. Buffalo Y. M. C. A. 49. University of Nebraska. 50. Charles J. Dieges. 51. Lewis Institute. 52. University of Washington-Lee. 53. University of Maine.

BELGIUM.

Gold Medals	0
Silver Medals	1
Bronze Medals	7

Silver Medal—1. Euvre du Grand Air pour les petits.

Bronze Medals.

1. Association des Marcunvins, Brussels. 2. Club of Scholar Colonies, Bruges. 3. Committee of the Brussels Fair, Brussels. 4. Club of Scholar Colonies, Huy. 5. Denier de L'Instruction, Ixelles. 6. German Union for Scholar Colonies, Brussels. 7. Pedagogical Club, "Diestwerweg," Antwerp.

BRAZIL.

Gold Medal—1. P. Alegre.

FRANCE.

Gold Medals	6
Silver Medals	6
Bronze Medals	3

Gold Medals.

1. Union des Societes Gymnastique, Bordeaux. 2. Union des Societies Francaise de Sports Athletiques, Paris. 3. Union de Societe de Civ. de France, Paris. 4. Carue, Paris. 5. Dr. Paul Richer, Paris. 6. Stade Francaise, Paris.

Silver Medals.

1. M. Cozalet, Paris. 2. M. Merillau, Paris. 3. Societe de Gymnastique, et dir tir La Bastidieune, Bordeaux, Paris. 4. Societe Municipale de Gymnastique, Vincennes. 5. Union des Societes de Gymnastique, Algerie, Algerie. 6. Societe d'Instruction Militaire, Paris.

Bronze Medals.

1. Alfred Feret, Paris. 2. Societe de Tir, Paris. 3. Tir Illustre, Paris.

GERMANY.

Gold Medals	7
Silver Medals	6
Bronze Medals	32

Gold Medals.

1. A. Bucilowsky, Berlin. 2. E. Reitz, M.D., Berlin. 3. J. A. Schmidt, Bonn. 4. R. Voigtlander, Leipzig. 5. Buchhandlung, Weidmannscke, Berlin. 6. Prof. Richard Anders, Charlottenburg. 7. Prof. Schoenberger Wichhagen, Berlin.

Silver Medals.

1. A. Pichlers, care of Witwe & Sohn, Leipzig. 2. Magistrat der Stadt, Frankfort-a-M. 3. Magistrat der Stadt, Eisleben. 4. Magistrat der Stadt, Konigsberg. 5. Oswald Faber, Leipzig. 6. Leopold Voss, Hamburg.

Bronze Medals.

1. O. Bonde, Altenburg. 2. Dr. Deipser, Newvied. 3. H. Fricke, Hamburg. 4. Konigliches Landratsantzu Gelsenkirchen. 5. J. F. Lehman, Munich. 6. Realschuldirektor Lorens, Quedlinburg. 7. O. Nemnich, Weisbaden. 8. J. J. Weber, Leipzig. 9. Fr. Lurssen, Amunddie, Bremen. 10. C. H. Beck, Munich. 11. Direktor Emil Von Lange, Munich. 12. Fischer Gustav, Berlin. 13. Fischers Medizinischer Verlag, H. Kornfeld, Berlin. 14. Crethlein & Co., Leipzig. 15. M. Hesse, Leipzig. 16. Kesselringsche Hofbuchhandlung, Leipzig. 17. Klahr, Oberlehrer, Dresden. 18. Dr. Kolrauch, Hanover. 19. F. Leinweber, Leipzig. 20. R. Lion, Hof. i. B. 21. C. Meyer, Hanover. 22. H. Paetel, Berlin. 23. Martin Oldenburg, Berlin. 24. Prof. Prebatsch, Cohn. Breslau. 25. Richard Schoets, Berlin. 26. Schulhaus-Verlog, Berlin. 27. K. Sieke, Rendsburg. 28. Elwin Straude, Berlin. 29. Eduard Strauche, Leipzig. 30. E. F. Thienemann, Gotha. 31. Waisenhausbuchhandlung zu Halle. 32. Verlag der Schwimmerzeitung, Charlottenburg.

JAPAN.

Gold Medal—1. Ito Tafuka, Tokio.

Silver Medals—1. Kohei Nakamura, Higashiju, Osaka. 2. Hishiyama, Jinbei, Osaka.

MEXICO.

Silver Medal—Timperi, Romule.

ENGLAND.

Bronze Medal—James Kay, London.

CANADA.

Gold Medal—McGill University.
Silver Medal—R. Tait McKenzie, M.D.

In the foregoing report, bronze medals have been awarded clubs and colleges who have exhibited trophies in the Trophy Room of the Department of Physical Culture: Twenty-second Regiment, N. Y., N. G., New York City. Schools of New York City. Schools in Chicago. Schools of Louisville, Ky. Y. M. C. A., Buffalo, N. Y., Central Department. Y. M. C. A., Baltimore, Md., Central Branch. Y. M. C. A., Cincinnati, Ohio. Y. M. C. A., Washington, D. C. Y. M. C. A., Chicago, Ill. Y. M. C. A., Boston, Mass. Y. M. C. A., Dayton, Ohio. Y. M. C. A., New Haven, Conn. Albion College, Albion, Mich. Amherst College, Amherst, Mass. Columbia University, New York City. Dartmouth College, Dartmouth, N. H. Kentucky University, Frankfort, Ky. New England Intercollegiate A. A. A. University of Chicago, Chicago, Ill. University of Nebraska, Lincoln, Neb. West Point Military Academy, West Point, N. Y. New York Athletic Club, New York City. Star Athletic Club, Long Island City, N. Y. Brookline Swimming Club, Brookline, Mass. Xavier Athletic Club, New York City. Detroit Boat Club, Detroit, Mich. Norwegian Turn Society, Brooklyn, N. Y.

In the foregoing report, Collaborators' medals have been awarded: Henry Suder, Board of Education, Chicago, Ill. Joseph E. Raycroft, University of Chicago, Chicago, Ill. George W. Ehler, Central Y. M. C. A., Chicago, Ill. Miss Senda Berenson, Smith College, Northampton, Mass. Dr. Edward Hitchcock, Amherst College, Amherst, Mass. W. E. Day, Dayton, Ohio. George Brozius, 1508 Chateau Ave., St. Louis, Mo. A. E. Kindervater, 1205 Dillon St., St. Louis, Mo. F. C. Breakspear, Chicopee Falls, Mass. Milton B. Reach, Chicopee Falls, Mass. Horace Brown, Chicopee Falls, Mass. Harry W. Marion, 126 Nassau St., New York City. Dr. Luther Halsey Gulick, 236 Willoughby Ave., Brooklyn. John T. Doyle, 15 Warren St., New York City. Hugh S. Quinn, 15 Warren St., New York City. F. G. Lawrence, 15 Warren St., New York City. Walter Camp, 15 Warren St., New York City. Henry Chadwick, 15 Warren St., New York City. George T. Hepbron, 15 Warren St., New York City. Frederick Toombes, 49 Park Place, New York City. R. Tait McKenzie, M.D., McGill University, Montreal, Canada. M. Cozalet, Paris, France. M. Morillau, Paris, France. Direktor Emil von Lange, Munich, Germany.

Gold Medal.

Dr. Luther Halsey Gulick, Chairman of the Physical Training Committee, who organized, under the Department of Physical Culture, the Physical Training Lecture Course during the month of August, without doubt the most important congress of physical training men ever brought together at any one time in the history of physical training in the world.

"DEPARTMENT OF EDUCATION,
THE CITY OF NEW YORK,
OFFICE OF THE SUPERINTENDENT OF SCHOOLS,
PARK AVENUE AND FIFTY-NINTH STREET.

Dear Sir or Madam:—Your attention is called to the opportunities for useful service in the elementary and high schools of the city of New York for teaching physical training. Each teacher of physical training in the elementary schools has supervisory work to do over school districts embracing approximately 25,000 children, and has relation to the regular grade teachers of the districts. The high school teachers do actual teaching rather than supervisory work.

The salaries paid are as follows:

TEACHERS OF PHYSICAL TRAINING.

ELEMENTARY SCHOOLS.

	Minimum.	*(Yearly increase.)*	*Maximum.*
Men (per year) . . .	$1,200	($100)	$1,600
Women (per year)	900	($100)	1,200

HIGH SCHOOLS.

Assistant Teachers—			
Men (per year) .	$1,300	($110)	$2,400
Women (per year)	1,100	($80)	1,900
Junior Teachers—			
Men (per year) .	900	($50)	1,200
Women (per year)	700	($50)	1,000

A certain limited amount of allowance is made for experience beyond that which is required in order for the candidate to be eligible for license.

A circular is enclosed which gives definite statement in regard to eligibility and date of examination. For those who do satisfactory work, these positions are practically for life. There is also a pension after a service in teaching of thirty years, twenty of which has been in the public schools of New York City.

Sincerely yours,
LUTHER HALSEY GULICK,
Director of Physical Training.

DEPARTMENT OF EDUCATION—THE CITY OF NEW YORK.

Examination for License as Teacher of Physical Training in Elementary Schools or in High Schools.

NEW YORK, February 1, 1905.

A written examination for license as teacher of physical training in elementary schools or in high schools will be conducted by the Board of Examiners on Thursday, April 13, and Friday, April 14, 1905, commencing at 9.30 A. M., at the Hall of the Board of Education, Park Avenue and 59th Street, Manhattan. An oral and practical examination will be given at the call of the Board of Examiners. Applicants coming from a distance will be examined orally on Friday, April 14. The oral examination will include a practical test with a class in physical training, as well as individual performance. *Applicants should provide themselves with gymnasium suits for use in the practical tests.*

I. *License for Elementary Schools.* No person will be eligible for this license whose age on April 13, 1905, is under twenty-one or over forty-one years. Under this provision an applicant will be regarded as eligible up to and including the day preceding his forty-first birthday.

Each applicant must have the following qualifications:

(*a*) Graduation from a satisfactory high school or institution of equal or higher rank, or an equivalent academic training, or the passing of an academic examination; (*b*) the completion of a satisfactory course of professional training of at least two years in physical training; (*c*) three years' experience in teaching physical training, which three years must not include the two years devoted to professional training; or six years' experience as a class teacher teaching physical training a satisfactory portion of the time, which six years may be inclusive of the years devoted to professional training.

The written examination will be upon (*a*) applied anatomy, physiology and hygiene; (*b*) history and literature of systems of physical education; (*c*) gymnastic games and athletic sports; (*d*) the principles and the practice of physical training, including principles of education, methods of instruction and class management.

II. *License for High Schools.* No person is eligible for a license for service in the high schools of New York City who is not over twenty-one and less than forty-one years of age.

Each applicant must have one of the following qualifications:

1. JUNIOR TEACHER.—Graduation from a college or university recognized by the Regents of the University of the State of New York, together with the completion of a satisfactory pedagogical course of at least one year, or, in lieu of such course, one year's

satisfactory experience in teaching in secondary schools. The pedagogical study here mentioned must amount to at least 210 hours, of which 90 may have been in logic and psychology.

2. ASSISTANT TEACHER.—One of the following: (*a*) Graduation from a college or university recognized by the Regents of the University of the State of New York, and not less than three years' satisfactory experience as a teacher in secondary schools or in colleges. One year of satisfactory post-graduate work resulting in a degree may be accepted in lieu of one year of the required experience in teaching.

(*b*) Graduation from a college or university recognized by the Regents of the University of the State of New York, and two years' satisfactory post-graduate work in the subject in which the applicant seeks a license and in the science of education, and one year of satisfactory experience in teaching in colleges or in secondary schools, or in the last two years of elementary schools, which year of experience must not be concurrent with said post-graduate work.

(*c*) Graduation from a college or university recognized by the Regents of the University of the State of New York, and five years' satisfactory experience in teaching, at least two of which shall have been in high schools or in the last two years of the New York City public elementary schools.

(*d*) Graduation upon completion of a satisfactory high school course or an equivalent academic education; seven years' satisfactory experience in teaching, including either two years of teaching in grades of the last two years of the New York City public elementary schools, or five years of teaching in secondary schools; and the completion of satisfactory university or college courses in the subject in which the applicant seeks a license, and in the science of education. The courses here mentioned must amount to at least 120 hours, of which 30 must have been in the science of education.

(*e*) Graduation from a satisfactory high school course or from an institution of equal or higher rank, and two years of professional training in the subject in which the applicant seeks a license; and four years' satisfactory experience in teaching such special subjects.

The written examination will include physical training (as above) and the science of education.

General Regulations.

In the written and oral answers to examination questions, applicants must give evidence of ability to use the English language correctly.

All documents submitted as evidence of scholarship, training or experience must be originals, and must be accompanied by duplicate copies. The filing of such documents is optional. No diplomas will be received, except in cases where the institution is no longer in existence.

No applicant will be licensed who does not pass satisfactorily a physical examination, to be conducted by one of the physicians authorized by the Board of Education. For applicants from a distance of 75 miles or more, the physical examination will be held on April 13 and 14; for all other applicants a special call will be issued. No person will be licensed who has not been vaccinated within eight years, unless the examining physician recommends otherwise.

The licenses issued under these regulations hold for a period of one year, and may be renewed for two successive years, without examination, in case the work of the holder is satisfactory. At the close of the third year of continuous successful service, the City Superintendent may make the license permanent.

Applications to enter the examination should be filed prior to April 3, 1905. Blank forms for the purpose may be obtained by addressing Room 419 of this office.

William H. Maxwell,
City Superintendent of Schools.

ABSTRACTS.

THE ANTHROPOMETRIC INVESTIGATION OF HOSPITAL PATIENTS.—F. C. Shrubsall (British Medical Journal, December 31, 1904) states that the object of his paper is to show that, as regards the influence of urban residence, London follows the same rule as the continental cities, and to enquire if any relation exists between health and physical characteristics. His conclusions in part are: (1) That certain diseases show special affinities for certain types of population; (2) That adult hospital patients, as a whole, are slightly fairer than the average population within the sphere of attraction of each hospital; (3) That with each successive generation of city life the fair element sends an undue proportion of its numbers to the hospitals; (4) That child patients are markedly fairer than the children in the districts around the hospitals; (5) That diminution of stature and increase of brunette traits are almost certainly progressive with increased heredity of an urban environment. During the early years of each generation the fair element certainly presents its maximum representation. During this period the chief causes of death are disorders of the alimentary and respiratory systems. The special instances of illness of the lighter class of the community continues until the period 20 to 25, when, owing to the sudden arrest of mortality from pulmonary tuberculosis, the darker element begins to suffer severely; at this period, 20 to 25, it seems certain that dark traits are at their maximum frequency. Between the ages of 20 and 40, about half the deaths that occur are due to pulmonary tuberculosis. —Abst. American Medicine.

To the Society for Internal Medicine, Dr. Schrötter reported on the results of some observations on the gaseous tension of the blood and on cardiac work, made in conjunction with Prof. Löwy of Berlin. By the introduction of catheters into the deeper air passages, the isolation of certain portions of the lung, and the removal of portions of the pulmonary gases, it was found possible to determine the tension of the blood gases. The following results were obtained: (1) The elasticity of the lung is so great that the removal of even considerable quantities of air from isolated portions does not at all alter the pressure in them. (2) The occlusion of even large lung areas does not necessarily change the oxygen content of the arterial and venous blood. (3) The oxygen tension of the venous blood averages 5.3 per cent., or 37.5 mm.Hg. (4) The carbon dioxide tension of the venous blood averages 6 per cent., or 42.2 mm.Hg. (5) The nitrogen tension is about 89 per cent. (6) The venous blood is saturated to about 60-65 per cent. in relation to the atmospheric air. (7) The consumption of oxygen by the tissues in absolute terms is 19 per cent. for the arterial blood, and 12.5 per cent. for the venous blood. equal to 6.5c.c. from 100 of blood, and corresponding to 34 per cent. of the arterial oxygen. (8) In an individual weighing 60 kilograms, in a state of rest 3.8 liters of blood circulate per minute, that is, 64.2 c.c. per kilogram. The amount per second and kilogram of body weight is 1.4 c.c. (9) In man the period of circulation is about 72 seconds. (10) The systolic volume of the human heart may be estimated as equal to 55 c.c., that is, 1-1,200 of the body weight, or 1-84 of the blood volume. (11) The circulating activity of the heart is 2.3 per cent. of the total cardiac work. (12) The total cardiac work of an individual of 60 kilograms at a blood pressure of 100 mm. averages 7.11 mkg. per minute; or per systole, at a pulse rate of 70, .102 mkg., or 102 grams. The cardiac work per kilogram of body weight equals 118 grams per minute. (13) In order to propel 1 c.c. of blood 1.8 grams of work is necessary. (14) The heart work for twenty-four hours is equivalent to 10,000 mkg., which is equal to 3.6 per cent. of the total energy output. The ratio of the heart work to the respiratory work is 1 to 2.4. Both together, therefore, amount to 10 per cent. of the daily consumption of energy. The heart requires 9.24 c.c. of oxygen per minute and 13c.c. of oxygen per systole when the pulse rate is 70. The coronary arteries receive per minute at least 139 c.c. of blood, *i.e.*, the blood supply of the heart is at least seven times larger than that of the rest of the body when at rest. The following additional facts are of importance from a practical standpoint. Pulmonary hemorrhage is not to be feared even when well marked negative pressure is present in isolated portions of the lung. In the resting condition large portions of the lung may be thrown out of function or the main bronchus be occluded without the production of any change in the blood pressure or volume of ventilation. There is no danger of atelectasis of the lung even after protracted isolation, extending to forty minutes, of portions of the organ. The pressure of a metal catheter for this length of time in the deep air passages is unattended by danger. **Abst. Medical Record.**

SPECIAL EDUCATION OF BACKWARD CHILDREN.—Not the least interesting of the many questions dealt with by Dr. Kerr in his annual report is that in which he discussed the intermediate or Förderklassen system of schools, instead of the special classes approved by legislation in England some five years ago. At present, healthy intelligent children are kept back by those (at least 10 per cent. of all the children who are on the rolls in London) whose intelligence is below the average, or whose misfortunes have kept them back, while the work, if not actually wasted upon these defective or backward children, is in many cases harmful. For instance, the ophthalmologists' examinations have shown 10 per cent. in the standards to have visual acuity, only one-third the normal or worse (V=6-18 or less). It may also be taken that from 3 to 5 per cent. of the children are so deaf that they are retarded through their whole school life by this defect. A very considerable number are debilitated. In some cases the debility is due to congenital causes, but more generally it is acquired in early life through bad nursing and improper feeding; to the effects of whooping-cough and measles, also Dr. Kerr attributes much backwardness and debility. Then there are those children who, deprived of sufficient exercise, sunshine and fresh air, have further to contend with illness after illness. On to the sequalæ of the zymotic diseases tuberculosis is frequently grafted, the consequence being that by the age of 7 or 8 years a considerable number of children have fallen eighteen months behind the average of their fellows as regards knowledge and school attendance.

For the backward children, now crowded into the lower standards, some intermediate schools or departments of schools are required, the children to be classified according to their capabilities. The classes would be small enough to allow of individual attention. The children could have some extra feeding, more play, and would learn almost entirely by doing and saying instead of reading and writing. By this system many convalescents would regain strength and go back to their ordinary schools, some would remain throughout their school life, while the worst cases might have to pass into the special classes for the deaf, blind, or physically or mentally defective.

The experiment of intermediate schools has been tried for some time at Mannheim, and the following is the account drawn up by Mrs. F. M. D. Berry, M.D., of the statement made to the recent Congress on School Hygiene at Nüremberg, by Dr. Sickinger, member of the Educational Board, and Dr. Moses, the medical officer.

The main novelty in this system lies in the fact that, besides the classes of the ordinary schools and the classes for the mentally defective now found in all large educational centres, there is a third system of classes—the Förderklassen system. These are for children who, from various causes, are unable to keep up with the ordinary school work. The reasons which caused the Mannheim authorities to found this class system were:

1. The capabilities of children of the same age are very

various owing to physiological, psychological, pathological, and social reasons. It is impossible that all children in the elementary schools should follow the same course of instruction, and reach the same goal. A considerable number of pupils never reach the highest classes.

2. The old system by which backward children were left behind in a class when their classmates passed up, and had to go over the same ground again with younger companions, is found to have a discouraging and depressing effect. Such children, too, were liable to be neglected by teachers. It was considered that children who, from permanent or temporary causes, are below the average in their capacity for work, need special pedagogic and hygienic treatment in order that they might be developed as far as their powers admit, and may not suffer from school attendance.

3. The children of better capabilities benefit by the withdrawal of backward classmates, who act as a drag upon the rest of the class.

"These auxiliary classes, the Förderschule system, are run on similar lines to those of the ordinary school; they differ rather in the quantity than in the kind of work demanded. Instead of the seven or eight standards of the ordinary German school, the curriculum consists of only five or six. The number of children in a class is smaller, thirty-five being the maximum number allowed, hence greater individuality in the teaching is possible. Special facilities are afforded the children for participating in any hygienic adjuncts to the school, as baths, dinners, or holiday homes.

"These classes are found specially beneficial to the following groups of children—children of slow understanding, but who often are not without intellectual power—nervous, anæmic, and debilitated children—children in a low physical and nervous condition, owing to unsatisfactory home surroundings, and children with defective sight or hearing, not severe enough to necessitate their being placed in schools for the blind or deaf.

"The children are usually differentiated at the end of their first year, the backward ones being passed out into the second or third system of classes, according as they are merely backward or actually mentally deficient. One result of the formation of the auxiliary school is that only cases of definite mental deficiency are admitted to the centres for instruction of the mentally defective, and once admitted it is rarely considered desirable to pass them out. It will be seen by reference to the accompanying diagram that, whereas each year children are passing from B. to A, there is no such passage from C. to B."

Intermediate schools would become a necessity were medical examination of school children compulsory in elementary schools, for without a special school to send backward or deficient children to many of the advantages of medical examination would be lost. Properly worked, medical examination and intermediate schools in combination would in a short time save the State twenty times the preliminary expenses, and would assist the unfit to grow up into healthier and happier subjects. Abst. Brit. Med. Jour.

MOTOR CENTRES IN THE CERVICAL ENLARGEMENT.—Blumenau and Nilsen report the case of a soldier whose arm was amputated at the upper third for tubercular disease. Four months after the operation the patient died of pulmonary tuberculosis. On staining with Nissl's method it was found that the anterior horns of the spinal cord in the four lower cervical and the upper thoracic segments were atrophied, and that the ganglion cells therein were the seat of chromatolysis. As this had not occurred in the other parts of the cord, the authors attributed these changes to the operation. The case, therefore, demonstrates the fact that the motor centres for the upper extremity as a whole are situated in the cervical enlargement in man, just as was found in the animal experiments which were made by Parhorn, Goldstein, Marinesco, and others. Abst. New York Medical Journal.

FRESH WATER AND SALT WATER BATHS IN REDUCING TEMPERATURE.—Drzhevetski found that there was practically no difference between fresh water and salt water baths, so far as their influence on the thermal exchange was concerned. He could not find any difference in the increase of temperature after a hot bath or in the decrease after a cold bath, according to the quality of the water, whether fresh or salt; nor was there any appreciable difference between salt water and fresh water baths as regards their influence on the muscular power and on the pulse of the patient. The subjective sensations of the patients in being immersed into the two different kinds of baths, at the same temperature, were not appreciably varied. These results were obtained after accurate observations of patients during sixty-six baths, of which forty-one were in fresh water and the rest in salt water. The observations were made in a specially constructed calorimetre bath-tub, invented by Peskoff.—Abst. New York Med. Journal.

WEAR AND TEAR OF THE NERVES WITHOUT NORMAL REPAIR.—In this second article Edinger discusses the abnormal wearing-out of the peripheral nervous system without normal repair. The wearing-out may be due to relative or absolute excessive functioning or to the influence of some toxin or to a combination of both factors. The resulting neuritis in these cases is a painless affection, sometimes not giving rise to any symptoms, or at most, to a little paresthesia or motor weakness. There is no need to distinguish between the neuritis of old age, of diabetes, infectious diseases or of pregnancy. All belong, Edinger asserts, in this catagory of wear and tear of the nerves without normal repair, entailing a painless neuritis. Alcohol, lead and arsenic do not attack the nerves directly, but they weaken them so that wear and tear use them up more quickly. No case of acute paralysis after lead, alcohol or arsenic poisoning is on record. In the course of time a hard drinker is liable to present such a using up of so many nerves that the clinical picture of tabes, with or without muscular atrophy, is apt to result, or else a condition resembling progressive neurotic atrophy. This peripheral pseudotabes has many points in common with true tabes. It is due to the wearing out of the nerves injured by alcohol, while in true tabes the abnormal wearing-out of the nerves is due to their having been injured by the syphilitic virus.—Abst. Jour. Amer. Med. Assoc.

BIOLOGICAL THEORY OF SLEEP.—Clarapède considers as erroneous the usually accepted conception according to which sleep is thought to be the consequence of an arrest of functioning by intoxication and by asphyxia. He believes, on the contrary, that sleep is a positive function, an instinct which has for its purpose, arrest of functioning. It is not because we are intoxicated or exhausted that we sleep, but we sleep in order to avoid these conditions. The fact that sleep is not proportional to exhaustion is an argument in favor of this theory. Sleep may be partial. One sleeps through certain noises, but not through others. Finally, the curve of the profoundness of sleep, inexplicable by the toxic theory, is in harmony with the theory that regards this phenomenon as a positive nervous function. The instinct, the reflex, is provoked by numerous excitants: endogenous (condition of the blood, sensation of fatigue), exogenous (images empirically associated with the idea of sleep). The phenomenon in itself is a reaction produced by these excitants and is an inhibition which manifests itself subjectively by a lack of interest in exterior things.—La Presse Médicale, December 21, 1904. Abst. Med. Record.

AMBIDEXTERITY.—N. Bishop Harman first reviews a number of morphological facts in relation to visceral asymmetry in human being. He then advances an hypothesis as to the presence of a general right-handedness in man. He suggests an incident in the life of primitive man in which two of these beings have a hand to hand conflict. One learns the secret of division of labor in the fore-limbs, and uses his left arm for a shield and his right for fighting. He is the victor in the fight, and his offspring, after he has captured the wife of the victim, would revert to the maternal custom of using the left hand. The writer then cites various examples to prove the real ambidexterity, it might better be called co-ordination of bi-manual action. Most men brush the hair with a pair of brushes, using each hand equally and coincidently in the task. Women plait the hair using both hands; they also hold the hand-glass first with one hand, then with the other, while adjusting plaits, coils and pins with the free hand. The process shows extraordinary bi-manual dexterity, with hand and eye cerebration. Violin playing illustrates in a most remarkable way the division of labor between the forelimbs. The use of the typewriter and the inscription of the Braille type by the blind, all show a wonderful bi-manual division of labor. The writer concludes that the aim of the Ambidextral Culture Society is futile, for Nature has already done the work which this Society proposes. In a long course of evolution Nature has shown that it is desirable to specialize in the use of the limbs.—Brit. Med. Jour.

THE SYSTEMATIC USE OF WORK AS A REMEDY IN NEURASTHENIA AND ALLIED CONDITIONS.—Herbert J. Hall, in speaking of the etiology of neurasthenia, remarks that in very many, if not all cases, it will be found that unusual worry or a tendency to overestimate the importance of small things, or some equivalent mental perversion, existed long before the well-known symptoms of neurasthenia appeared. Worry is the real thing, and it will, if long continued, breed in the sanest mind a dangerous unrest and unhappiness. Worry is often not distinguished from the mental or muscular fatigue which follows long and arduous labors. The idea is gaining ground that neurasthenia may be largely or wholly psychic. When neurasthenia is established, a feeling of fatigue is often brought on by the mere thought of exertion or by the anticipation of any task. With these ideas in mind, the writer has founded a School of Handicraft, where neurasthenics are taught to work. Pottery, weaving and basket-making are all taught there. All evident sources of fatigue, such as eyestrain, are eliminated as far as possible. When the patient first presents himself, he is put to bed for a few days, perhaps a week. He is soon asked to do something—without any warning—it may be to sit up in bed. A very gradual progressive program is written out each day, and intrusted to the nurse, who carries it out exactly. Anticipatory fatigue and worry are thus almost entirely eliminated. The hours of rest are gradually made shorter, and the hours of work longer, until the day is full of interesting work; the patient forgets himself, and there is no longer need of prolonged rest. Pride and satisfaction in work, and in life and self-forgetfulness are the great ends to be obtained. The products of the shop are worthy of attention, and when they have reached commercial value, they are sold and the proceeds credited to the maker. Although the work is still in the experimental stage, the writer has seen enough of its happy results to feel reasonably sure that this method of treatment will give fairly quick results. He hopes by it to re-organize the life of the individual on better lines, and lead him up to a life of usefulness to himself and others.—Boston Med. and Surg. Jour. Abst. Med. Record.

REVIEWS AND BIBLIOGRAPHY.

DIE ZUNEHMENDE UNFAHIGKEIT DER FRAUEN IHRE KNIDER ZU STILLEN. Von G. V. Bunge. E. Reinhardt, München. 1903. Pp. 32.

This distinguished physiological chemist has worked partly by the methods of the laboratory and partly by the questionnaire method based on three thousand answers. The latter leads him to this very important conclusion, which has caused much popular discussion in Germany. Inability to nurse children is in the highest degree hereditary. "If a woman cannot nurse her child, her daughters are with hardly an exception unable to do so, and the power to do so is thus irrevocably lost for all succeeding generations." This inability is increasing rapidly, especially among cultivated classes, and the increase of inability to nurse grows rapidly with successive generations. The chief causes he thinks to be two: tuberculosis and hereditary nervous diseases and psychoses. Next comes the drinking habit in the father. This is especially fatal to the power. It is closely connected with other symptoms of danger, especially inability to withstand diseases of all kinds, where, as a result, children are insufficiently nourished, and the decadence increases from generation to generation, and leads in the end, after endless suffering, to the extinction of the race. This author holds that the generation of diseased and degenerate children is the "greatest crime men can commit," and he concludes that a normal man who wishes healthy posterity will never marry a young woman who was not nursed by her own mother in the natural way, will avoid girls from tubercular families, daughters of drinkers, and all those with any psychopathic inheritance.—Rev. Pedagogical Seminary.*

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*We are indebted for the privilege of republishing these reviews to the courtesy of Pres. G. Stanley Hall, Editor, and Mr. L. N. Wilson, Publisher, of that most valuable educational journal, the *Pedagogical Seminary*.

DER KORPER DES KINDES FUR ELTERN, ERZIEHER, ARZTE UND KUNSTLER. Von C. H. Stratz. F. Enke, Stuttgart. 1904. Pp. 250.

This elegant book, with one hundred and eighty-seven cuts describes the child to the age of full maturity. The chapters on growth and proportions and normal development in general are perhaps the best, but the great merit of the book lies in its illustrations.—Rev. Ped. Seminary.

FUHRT DIE HYGIENE ZUR ENTARTUNG DER RASSE? Von Max Gruber. E. H. Moritz. Stuttgart. 1903. Pp. 35.

This author attempts to meet the charge that special hygienic provisions and attention to regimen are deleterious to the race by keeping alive those unfit to survive. He proves by statistics that this is not the case, because all methods that lead to the extermination of the weakest tend also to the degeneration of those fittest to survive. Neglect of hygiene thus reduces the whole race, the best included, to a lower level than it would otherwise maintain.—Rev. Ped. Seminary.

CONTRIBUTION TO THE STUDY OF THE FEEBLE-MINDED IN HEIGHT AND WEIGHT. By A. R. T. Wylie. Faribault, Minn. Pp. 7.

This is a valuable and careful study by an expert in the field. He shows that the average height and weight of the feeble-minded approximates the minimum of the normal. The approximation is closest at the age of about ten, suggesting that while the normal child is pausing for the adolescent outburst of growth, the feeble-minded is making up for delayed growth in earlier years. Puberty is delayed with the feeble-minded in such a way that there is often a depression at the age of fifteen. Rapid growth followed by delay or rest seems typical for the feeble-minded. Growth power among them seems deficient and soon exhausted to be made up slowly later. This too, the author thinks explains the high mean variation in this class.—Rev. Ped. Seminary.

THE LIGHT OF SCHOOLROOMS. A Manual for School Boards, Architects, Superintendents and Teachers. By Stewart H. Rowe. Longmans, Green & Co. 1904. Pp. 94.

This is an admirable handbook, well-illustrated by thirty-two cuts, many of them full page illustrations. The first section discusses the selection of the site. The second, which is much longer discusses the architect's plans both in constructing new buildings and in re-modeling old ones. The third section describes the teacher's duty in all those respects which pertain to light. Three interesting appendices follow, one giving the mathematical ratio between the height of the source of light and the distance of the farthest seat. The second tell us how to test light both natural and artificial, to determine whether or not it is sufficient, and the third tells how to test the eyes of children in ways practicable in every schoolroom. An interesting bibliography is appended and also the various kinds of window material with the names and addresses of their manufacturers.—Rev. Ped. Seminary.

A HISTORY OF DANCING FROM THE EARLIEST AGES TO OUR OWN TIMES. From the French of Gaston Vuillier. D. Appleton & Co. New York. 1898. Pp. 446.

This elegant work contains twenty full plates with 409 illustrations. The latter are full of interest, and, while the text if often chatty and gossipy, it is manifestly by an enthusiast. Especially interesting to many will be the chapters on religious and sacred dances. Perhaps next will come those on rustic and pastoral dances. The great period of modern dancing appears to have been under Louis XIV, XV and XVI, when it had a certain degree of secularity and was placed in more or less antagonism to religion and morality.—Rev. Ped. Seminary.

FOLK-SONGS AND OTHER SONGS FOR CHILDREN. Edited by Jane Byrd Radcliffe-Whitehead. Oliver-Ditson Company. Boston. 1903. Pp. 226.

At last we have a book of genuine folk-songs: English, Scotch, Irish, German, French, Scandinavian, Polish, Russian, Italian, Spanish with songs of patriotism, carols, nursery songs, lullabies, rounds, catches and part songs, two hundred and twenty-six in all, all in English, most of them in old original music, well-chosen, and with a rich refreshing aura of the good old times, and all with very simple piano accompaniments. We have seen nothing in this line which is more wholesome, refreshing, or soundly pedagogic. We cannot help wishing, invaluable as it is, that the author had seen fit to add a few good negro and perhaps even Indian melodies, although we can better dispense with college songs. This is a book that should be in every schoolroom for the lower grades and every pupil ought to sing, or at least hear every one of them.—Rev. Ped. Seminary.

GYMNASTIC NOMENCLATURE OF THE YOUNG MEN'S CHRISTIAN ASSOCIATION OF NORTH AMERICA. Third Edition: Revised and Edited by the Nomenclature Committee of the Physical Directors' Society of the Young Men's Christian Association. Printed by the International Committee of the Young Men's Christian Association, No. 3 West Twenty-ninth Street, New York City. 50 cents.

Gymnastic Nomenclature has long been under discussion, and fruitless attempts have been made to formulate from the Swedish, German-American, and American terminology, a concise and comprehensible terminology which would prove satisfactory for general use.

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The Terminology seems to be borrowed largely from that used by the German Turner Societies.

Though weak in some respects, it is, on the whole, the simplest and best work of its kind yet offered to the instructor of Gymnastics.

F. D.

MIND AND BODY. MILWAUKEE, FREIDENKER PUBLISHING CO. 1904. VOL. XI.

No. 130 (December). The Objects and Methods of Physical Training in Primary and Grammar Schools, by Wm. A. Stecher. On the Correlation of the Work of Physical Training with Instruction in Personal Hygiene, by Theodore Hough (concluded in No. 131). Parks and Playgrounds of Greater Boston and its Neighbors, by Sylvester Baxter. The N. A. G. U. Normal School, by Mabel C. Cook. In the Gymnasium, by Dr. Robert Nohr (continued in Nos. 131 and 132).

No. 131 (1905, January). Worry and Allied Faulty Mental Habits, by Dr. G. L. Walton (concluded in No. 132). The Spirit of True Sportsmanship, by George R. Eastman. Flaws in the Anti-Bath Argument, by Dr. N. S. Davis.

No. 132 (February). A Bit of Science of Life from a Physical Culture Standpoint, by Carl L. Jones. Physical Instruction as a Profession, by E. L. Crosby. Past, Present, and Future of Athletic Sports, by George T. Hepbron. Contents of Volume XI (March, 1904, through February, 1905).

MONATSSCHRIFT FUER DAS TURNWESEN. BERLIN, WEIDMANNSCHE BUCHHANDLUNG, 1904. VOL. XXIII.

No. 11 (November). The Physical and Psychical Aspects of Play, by M. Wegener. Methods of Gymnastic Instruction, the Training of Teachers, and the Work of an Inspector, by Turninspektor Schmuck (concluded from No. 10).

No. 12 (December). The Lack of Teachers of Gymnastics in the Higher Schools, by Oberlehrer Prohl. A Modified Game of Tag, by Schubert. Review of J. B. Schubert's "Uebungs-Gruppen für das Turnen an der wagrechten Leiter in Volks-und Mittel-Schulen beiderlei Geschlechts" (Hof, Rud. Lion, 1904. 37

pages), by H. Schröer. A Popular Pentathlon at the Royal Matthiasgymnasium in Breslau, by Dr. Machnig. Instruction in Gymnastics at the Normal Schools, by H. Schröer.

F. E. L.

KOERPER UND GEIST. LEIPSIC, R. VOIGTLAENDERS VERLAG, 1904. VOL. XIII.

No. 17 (November 19). Reply to Criticisms of Dr. F. A. Schmidt's "Unser Körper," by the author. The German Turnerschaft and the North American Turnerbund, by Dr. F. A. Schmidt. Review of Dr. med. E. Luckow's "Lehrstoff für den Turnunterricht an Knaben-Volks-und Mittelschulen, stufenmässig zusammengestellt und nach Klassen geordnet, mit 104 Abbildungen und drei Anhängen" (Berlin, Hugo Muskalla, 1904), by Karl Möller.

No. 18 (December 3). Swedish and German Gymnastics, by Dr. Alb. Siebert (based on Lefebure's "L'éducation physique en Suède." Concluded in No. 19). The Construction of Swinging Apparatus, by E. Strohmeyer. Review of Dr. F. A. Schmidt's "Wandtafeln" (Tafel I—Einwirkung und Erfolge der Leibesübungen bei der Schuljugend. Tafel II—Uebersicht der für die verschiedenen Altersstufen zweckmässigsten Leibesübungen. Leipsic, R. Voigtländer, 1904), by K. Koch.

No. 19 (December 17). Finnish Views of Physical Training (Viktor Heikel's "Theorie der Gymnastik"), by Minna Radczwill. Competitive Prisoner's Base in the Higher Schools of Berlin in the year 1904, by Oberlehrer Goepel.

No. 20 (December 31). Discus Throwing, by O. Karges and Emil Welz.

No. 21 (January 14). The History of Swimming in Recent Years, by Dr. Kurth. Contemporary Views of Physical Training in the Philanthropinistic Institutions at Dessau and Schnepfenthal, by Dr. W. Moestue. Dr. Franz Thalwitzer on the Parade Step, by Dr. Meisner. Prof. Dr. Neumann's Reminiscences of Jahn and his Gymnastics, by Prof. J. Vollert.

No. 22 (January 28). Positions and Movements of the Arms, by Dr. F. A. Schmidt. J. P. Müller's "Mit System" (German translation: "Mein System. 15 Minuten täglicher Arbeit für die Gesundheit," nach der 5. Auflage von M. und H. Tillge übersetzt. Copenhagen, Tillges Buchhandlung; Leipsic, K. F. Koehler, 1904), by K. Möller.

F. E. L.

DEUTSCHE TURN-ZEITUNG. LEIPSIC, PAUL EBERHARDT, 1904. VOL. XLIX.

No. 45 (November 3). The Present and Future of Physical Education, by Dr. Burgass.

No. 46 (November 10). Gymnastics as a Phase of Civilization, by Max Schwarze (concluded in No. 47). Obligatory Gymnastics in the Continuation Schools, and the Support of *Turnvereine* by the Community and the State, by Otto Pulwer.

No. 47 (November 17).—No. 48 (November 24). Social Cooperation, by Nawroth. Public Health in Germany, by Dr. Neuendorff.

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No. 52 (December 22). Our Gymnastic Apparatus, by Prof. Dr. Fr. Rösch.

No. 53 (December 29). Vol L, No. 1 (1905, January 5). The Influence of Gymnastics on Heart and Lungs, by Prof. Dr. R. Zander. Gymnasia and Gymnastic Apparatus in the United States, by J. Schüssler. The Unveiling of a Jahn Monument in Bitterfeld. Relay Ball, and Three-Deep Played by Two Sides, by E. Fischer.

No. 2 (January 12). The Year 1903 in the Life of the German Turnerschaft, by Dr. R. Gasch (continued in No. 3 and later). Gymnastics in the Universities, by Hermann Kuhr. Adjustable and Portable Parallel Bars. Johann Georg Paschen's 1664 Manual of Vaulting with the Horse and the Table, by Theodor Wohlrath.

No. 3 (January 19). A Sailor-*Reigen*, by Reinhold Wehner. Bibliography of German Gymnastics and Games, Physical Education, etc., from July 1 to December 31, 1904, compiled by Dr. Ferd. Goetz.

F. E. L.

THE ELEMENTARY SCHOOL TEACHER.

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February, 1905. The School at Abbotsholme, conducted by Dr. Cecil Reddie, Patrick Geddes; pp. 321-333. Christmas at the University School, Mrs. F. H. Montgomery; pp. 334-348. Genetic Physiology the Basis of a New Education, Mrs. Carrie R. Squire; pp. 349-359. Textile Work in Linen, Edward F. Worst; pp. 360-363. Home Work for Children, Wilbur S. Jackman; p. 376.

THE PEDAGOGICAL SEMINARY.

June, 1904. Types of Adolescent Affection, Theodate L. Smith; pp. 178-203. Why Pupils Drop Out of the High Schools, William F. Book; pp. 204-232.

December, 1904. A Preliminary Study in the Psychology and Pedagogy of Leadership, Lewis M. Terman; pp. 413-451. Studies of a Child, Alexander F. and Isabel C. Chamberlain; pp. 452-483. A Contribution to the Hygiene of Teaching, Wm. H. Burnham; pp. 488-497. Child Study and Related Topics in Recent Italian Scientific Literature, Alexander F. Chamberlain; pp. 508-515. Child Study and Related Topics in Recent Russian Scientific Literature, Alexander F. Chamberlain; pp. 516-520.

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November, 1904. Physical Education at University of Pennsylvania, R. Tait McKenzie; p. 98. Do not Hide Your Light Under a Bushel, J. W. Seaver; p. 99. Dr. McKenzie: The Man and His Work; p. 100. Condition and Progress of Physical Training in America, C. Ward Crampton; p. 102. A Method for Determining Lung Capacity Mathematically, Winfield S. Hall; p. 103. Relation of Chest Contour to Lung Capacity, Francis F. Malone; p. 105. Development of the Amateur Athletic Spirit in Texas, F. Homer Curtiss; p. 106-107. Demonstration of Five Systems of Physical Training; p. 108. Class Development Work with Single Iron Dumb-bell, E. B. Mero; p. 109. A Record Season on Track and Field; p. 112. Teachers' College Gymnasium Dedicated; p. 113. Changes in Basket Ball by Rules of 1904; p. 113. Editorial; p. 114. Importance of College Athletic Control by Physical Directors, Paul C. Phillips; p. 115. Roberts' Health Hints for Men, No. 3, p. 118. Notes.

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"Who Killed Cock Robin?" and Marching in the Schoolroom. Abbie J. Gannett.

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AMERICAN PHYSICAL EDUCATION REVIEW.

George Wells Fitz, M.D.
Editor.

Vol. X. JUNE, 1905. No.

ADDRESSES OF WELCOME.*

James Earl Russell.

Dean of Teachers College, Columbia University.

I notice from the program that the first speaker of the evening who is scheduled is absent. We are without Dean Kirchwey, who was to have been welcomed by you, I am sure, because he represents in this University the athletic spirit and interest from the standpoint of the Faculty. There are some of us, you know, who take our physical training by proxy. Some of us have wives who do it for us; others trust it to members of their staff, or even to the student body. I do not suppose it makes much difference just how it is done, if the ends be accomplished.

We are very glad to have you here in Teachers College. We have a department of physical education and we are beginning the professional training of teachers for this work. I hope you will not misunderstand me if I confess that we are in need of enlightenment. We are not quite sure here of just what needs doing,— I think I speak for New York City in a measure, too. In these past few months we have heard a great deal from some quarters of fads, and occasionally something of frills of education. It leads us, of course, to a pretty careful consideration of what we are trying to do in our schools and what education means. There are those who tell us that the chief business of the public schools is to teach the three "R's." I do not know whether they believe it or not, but some do say, too, that if we want to have dancing, why do it at home; if we want to do cooking, do it in the kitchen, etc. And so, in narrowing the circle of that which is appropriate for schools and for school work, they do give expression to an educational philosophy which is heard and has been heard from the beginning of educational history by a great many people, namely, that the purpose of schools is to teach that which would not be learned outside of school. They take it for granted that people are going to find something to do, and do it if they can get it; that they will, under the pressure of public opinion, clothe themselves more or less decently; that they will conduct themselves, in public and in private, with a fair degree of respect for their fellow men. These matters,— physical health, manners and morals,— all that which goes to make up, not merely the man, but the man who is capable of earning a livelihood, should be rigorously excluded from formal educational work.

---

*Reception Monday evening, April 17, 1905.

There is another party coming to the front in these latter days who tell us that we do not know how to live. We are not even making the most of this body of ours, which is, or ought to be, a thing of great value to us. We do not know how to conduct ourselves in public or in private. We have not the proper kind of manners and morals, and we are not likely to get them. We cannot even speak the English language properly. Therefore all these are properly subjects for instruction. When the school undertakes to do all that is necessary in the upbuilding of youth,— the making of a man and woman,— it has a tremendous task at hand. That task is one that we are just now coming to realize in this country, and it is a most serious business that confronts us as a people.

Now I say we welcome you here because we want your assistance and advice. We come to you as experts, and we want you to tell us what physical education is, in the first place, and then, in the second place, how we are going to attain those ideals. We Americans are very impetuous, you know, when it comes to actually doing the thing. I heard a colored preacher not long ago in addressing a class of students of his own race in a southern school, urge upon them the necessity of thinking as they went. He said the trouble with us in these days is that we rush headlong into whatever seems for the time being desirable. We do not think enough and we try to go too fast. Time was when we reckoned time by the grandfather's clock which stood on the stairs, and it said "Ever, forever; never, forever." Time enough and to spare, of course. To-day we reckon time by the Waterbury, which says, "Git there! Git there! Git there!" We do want to get there in that sense, and we propose to hold you specialists responsible for "getting us there" in this particular field. Now just what is wanted from you and why we are glad to have you here can be expressed very much better than I can do it by one we have with us, who stands as a sort of a grandfather to education in New York City, who has a chance to exercise his parental authority very often indeed, and whose good advice is sought by many thousands of teachers, and by, I might say, many hundreds of thousands of children,— indirectly or directly. It is very proper that we should hear advice given by the President of the Board of Education of New York City,— Mr. Tifft.

Mr. Henry N. Tifft.

Ladies and Gentlemen,— I am delighted to be properly introduced as a grandfather. It has been a great anxiety to me, since this honor was thrust upon me out of a clear sky, lest people might think I was so young that I did not know anything. I have been trying to bleach my hair,— it only resulted in a bald spot; trying to get old,— it only resulted in my making myself more and more at home in my work. My family is large, as you know,— something like 600,000 children. They do not give me nearly as much trouble as my teachers (13,000 or 14,000), but I get along very well with them. But I am very glad to have a chance to look into the faces of people who, in my judgment, are doing so much to answer the question whether fads and frills are essentials or non-essentials. As we look into the facts and remember what Dean Russell said about doing our athletic exercise by proxy, I was thinking that the first athletic exercise I had was when my mother got after me, but I soon got beyond that and my father got after me. Then when I went to school there were no athletic exercises there. I went to school here in the city. I can remember distinctly the school, which was on the east side, and all the athletic exercise we had was on Saturday afternoon, when we ran for the nearest vacant lot and played base ball.

I believe that it is the natural disposition of all human beings to spend themselves in effort. It is as natural to the child to yell or run, to make all the noise possible, as to have fever. Personally I would rather have my children make all the noise that is possible than have fever. I think instinct leads naturally to exercise and that as we go along we are only doing what ought to be done when we provide the means for a reasonable and legitimate use of the body. That is not only necessary as a mere matter of duty, but desirable as a matter of actual physical health, as we all know, and what I have told you about the schools in the early days, of course, is a matter of history, and I am only too glad to say is almost gone, because we have athletics to-day in all our schools. We have to-day in all our 600 schools in all the grades, — primary, grammar, high schools, training schools, — athletic exercises. They are part and parcel of the regular curriculum. They are hardly, shall I say, enforced, but they are provided, and the children, I cannot say are made to do them, because they are anxious to do them. Now that means a great deal. It means, for instance, a relief from the strain that necessity is putting upon the children in this city, in the larger demands that are at this time made upon children. I am not here to defend our course of study, although, frankly, I am one who firmly believes that what were essentials twenty-five years ago are still essentials; but what were non-essentials twenty-five years ago have become essentials. If the healthy body has to read, write and solve examples, I believe that is all the more reason why we should provide the means for that work in our schools. Now we cannot in our schools go into an elaborate athletic course. We simply try to provide work that will produce graceful and clean bodies and clean thoughts, and the studies, of course, that go along with them. But, with it all, we find children are eager for it. We find children are in every way desirous of acquiring all the health they can in this exercise. Even in our summer school in vacation all the work carried on is quite as important as the work carried on in the winter, because we instruct the children at the time when temptation comes to them with the greatest possible force.

We have in some places athletic apparatus where there are more elaborate (if you please) exercises under the care of experienced teachers and their use is tried, but nothing in the way, we take it, that sinks the thought of mentality into the mere thought of purely physical improvement. They are simply aids, and if we can have in that line supplemental mental work in physical training we are certainly going to do something toward a healthy body, thereby getting a healthy mind and therefore working toward a larger life, for which reason we come here and say a word of welcome to you. I was very glad of the opportunity because I stand for improved athletics in our schools. I do not expect to find, and I am not sure that I would care to find, any over-elaboration of the system in our schools, — nothing more than is desirable for the purpose of training children in such a way that their bodies will naturally and healthily develop, to counteract, more or less, the confinement of the classroom, and to start them in ways that shall teach them the value of athletics and thus when they grow older they will not forget. What is coming is shown distinctly. The public school athletic league numbers something like 30,000 boys in the public schools voluntarily after hours devoting themselves to athletic exercises. We have in every way cultivated that love of sport, — better yet, let us say, desire for clean sport. Not so much competition, nor the working of athletics to the extent of extravagance, but an all round, well developed, even balanced boy or young man. Thereby, it seems to me, laying the foundation for a healthy and clean manhood and womanhood, and therefore laying the basis upon which to build a true, clean, wide awake, active, young city.

I am in the presence of our Physical Director, but I know no man has a monopoly of wisdom. No man sees things so clearly but somebody else can give him an idea. We are all of us more or less apt to look at things from our own standpoint. A ten cent piece close to the eye hides all the world. Put it away from you a little and you see all things. That is what you are doing by coming here and giving us a view of the outside. We know that you will aid us. We hope we will do you good.

Dean Russell.

When a new subject is introduced into the scene of work it is very natural that those who have had all the honor and all the support in the past should look a little askance at the new thought. They, having specialized, are not prepared to take this great-world view that Mr. Tifft has spoken of, and they hold their own work so close to their eyes that they fail to see the good that others may do. They have sometimes, however, a reason for it. The teacher coming into a new field for the first time is very apt to lack a sense of proportion for that work. I do not refer specifically to your field, but when a subject is first introduced it stands to reason that the teachers who come forward to present that subject are not as wise as his successors will be a few years afterwards.

A good many of our fads have been put in a rather unfavorable light by the mistakes of the special subject teacher. There is no need of disguising that fact. We live and we learn, and I am sure it is just the same in your field that it is in any field. We shall know a great deal better a generation hence what should be done in our schools than we know to-day. I can well understand how in this field that you represent, those who began were thinking specifically of some thing or some particular kind or set of actions. It may have been boxing; it may have been fencing; it may have been military drill, — but some particular thing, — and a teacher was called who could do that particular thing, and the teacher who *could* do it was the teacher who had the chance to do it. But now when that teacher is put up side by side with the teacher representing an older subject, with a teacher more widely trained, with a teacher more widely cultured, people are often so narrow as to criticise the subject because it happens to be unfortunately represented at the beginning. Personally, I am satisfied that this is the reason why so many people complain (I am not sure but sometimes they complain justly) in this particular field that you represent. Some of us who stand at the outside and look on feel like encouraging you to impress upon those who enter your work, first of all, to bring to it a better education, an all round education; that those who enter this field should have the finest training, academic training if you will, — I will put it broader, — I will say cultural training, that can be given, because the man, for example, who stands before a class of boys in the gymnasium, or who leads them on the athletic field has an opportunity that few teachers enjoy of bringing his personality to bear upon those boys. And the same thing is true of the woman who leads a class of girls. There is something in this physical ability, in this physical vigor, all by itself, that compels young people to admiration. That fact alone imposes an obligation upon those who lead in physical instruction such as, I believe, few other subjects in the school curriculum impose.

You have a duty, then, not merely to your pupils, not merely to the school or to the institution that you represent, but I feel that you have a duty to all teachers who may be pursuing your line of work in the years that are to come, — you should represent a finer manhood, a nobler womanhood, a higher degree of culture, and with it all a broader outlook upon the educational field as a whole. No one can represent a special subject to-day in our educational work properly unless that person is in touch with the whole educational field. In the future teachers of physical training will no more come into our schools with an examination merely in physical training, than a teacher of mathematics with an examination merely in mathematics. Something more is to be called for, namely, as comprehensive knowledge of the whole educational problem as that possessed by any teacher in any field. In years to come those who are engaged in special work must necessarily be guided by supervisors who have this broader outlook, who see the field in the large, and who are in daily touch with those engaged in other lines of school work, as a special teacher cannot be. I know of no more important post in this whole country in shaping the future of physical training and in developing that which must come in the future than the man who holds the supervisorship in this great city of New York.

I fancy some of you have wondered why I have been speaking of the public school, when there are so many higher institutions of learning in need of teachers. The teacher who controls the physical education work in a city like New York, or in any one of 200 cities in this country, is doing better work, greater work, more comprehensive work than a man who heads a department in any university, — not excepting the dean of a professional college.

The man or woman who is with the children as they come through school, helping them on to a better physical life, and therefore a better mental and spiritual life, is doing the great work of the future. I would not say that college work, or even secondary work, is not worth doing. It is worth doing precisely in the same sense that every other thing is worth doing, but the greatest work is the work at the bottom, not work at the top, when you consider it from the professional standpoint, and I am speaking here to-night from the professional standpoint to those who represent the profession of physical training, and I am glad that we have with us a man who is charged with a duty such as rarely comes to any man in this field or in any other: Dr. Gulick.

Luther Halsey Gulick, M. D.

President A. P. E. A.

Ladies and Gentlemen,—On behalf of the American Physical Education Association I want to thank you for your invitation and for the welcome which you have given us.

You have all read Kipling's Jungle Books. Do you remember one of the early stories in his first book where a small boy was playing on the ground and the monkeys above began throwing nuts at the boy, and he noticed them and spoke to them? Thereat they raced to the tree-tops shrieking, "They have noticed us! They have noticed us!" Dean Russell, in a certain way, in a profound way, has noticed us. Teachers College, not merely by its welcome to us here to-night, but by the equipment of the superb building in which we have been meeting, by the institution of a professional course, and Columbia University by its recent introduction of required work in the course, all taken together have, it seems to us, noticed physical training in a way which hereafter of necessity makes it necessary for us to stand upon a somewhat different footing from that which we have stood on hitherto. I remember very well the first professional position which I held. The man who preceded me was a professional pugilist, and there are a number of others in this audience whose first professional relation to their subject was in the footsteps of men of that character; the whole status of physical training was a status of sport, and we were not part of the educational world, nor did we desire to be noticed. Although, as time went on, physical training was recognized as necessary by more, still the people that were interested in the subject were not cultured people, on the whole, nor were they trained in a scientific way, so neither side could move. There were a few who came in thoroughly cultured and scientifically trained, but they labored under the enormous difficulty of working with those who were untrained professionally and uncultured.

Now no technical class grows of itself. Through the encouragement of those who were making for the higher things there was a gradual improvement of conditions. On the other side there has been this gradual readjustment. What we are as physical training people depends wholly upon what you men who are related to general education determine. If you pay the salaries which are commensurate with the salaries paid in other subjects; if the social status of the teacher in this subject corresponds with the social status of that given to other subjects, that is, if it is well supported, good men and good women will go into it, and, otherwise, they will not. And then, on the other side, let us say that good men and good women do go into it, as they have. We are helpless except as supported by your views. We may regard ourselves as very important, — we do. We do not think that there is anything in the world, excepting character, so important as good health. We know that it is wholesome. It is far more important to be well than to read or to write or to figure, — not equally important, — *more* important. I would rather choose a healthy, ignorant boy to grapple with life than a sickly one with brilliant scholarship. Others may prefer as I believe, or not. That is our conviction. Health is very important. But we do not determine our status. If you desire us, — the educational world, — then our positions may be higher. If you build buildings for us; if you establish professional courses for us; if you require physical education in secondary schools and in college curriculums and make honorable positions for us, which you have done, — then we stand. But our course is dependent upon you in the same sense that your work is dependent upon us. When an educational institution notices the American Physical Education Association in this kind of way, we feel exceedingly grateful, *exceedingly* grateful, not merely for the opportunity of meeting here, but for the opportunity of saying for ourselves that we appreciate this kind recognition which Columbia University and Teachers College has given to this movement which we believe to be so important.

Dean Russell.

I said at the beginning that we were to look to you for information. Dr. Gulick has defined the object of your work, good health. Now I venture to say that my friend Mr. Tifft and some 90 odd per cent. of men in this country who occupy analogous positions and who are looking for teachers of physical training, will not only pay those teachers, if they can find them, as they pay others, not only will guarantee them such social standing as they guarantee to others, but will make their life just as happy as they can make the life of any teacher, provided they can be sure that those teachers are working for good health and morals of their pupils. The trouble is, you know, we pick up our morning paper and instead of ——. I won't put it that way. We read of several tens of thousands of dollars profit from athletic games of a university in one column, and in another a deficit of $3,478 in current expenses of that same institution. The friends of that institution are called upon and implored to make up that sum, while the athletic department, on the other hand, has several tens of thousands of dollars to throw away. They have kept, in the meantime, a small corps of young men, improperly dressed, perhaps properly lodged, groomed as race horses would be, quite as carefully, more carefully possibly, and yet this same institution is in debt for professors' salaries for educational purposes. Good health! why it takes a distinguished professor to demonstrate that these people who through a series of years have been undergoing this training, have, not merely good health, but that their health has not been spoiled by the process. Some of us are thinking of what this means. Everything turns about a ball nine, and here we have a thousand, nine hundred odd, sitting on the bleechers and exercising their lungs and the rest doing the work. Good health! And then we see certain exercises in the classroom, certain wriggling parts of the bodies, and we still put that question: Good health? Good health? Now from the same college we need to have girls who some day will have homes of their own, trained in such a way that they will know what kind of things to give to their own children. They shall know how to build up a decent body during those five or six or seven years preceding school, and then we need to have work in the school that will insure a continuance of this home training. If you will keep your eyes fastened steadily on those two words "good health," and as fast as possible eliminate that which turns counter to them you will render a service not only to that portion of the profession which you represent, but to the whole educational profession. That is your business, and unless you can work it out you cannot expect us to work it out. Come around and talk it over in the other room over a cup of tea, a little lemonade and some other good things that our friends may have provided for us.

DOES TRAINING IN DANCING CONTRIBUTE TO GENERAL GRACE OF CARRIAGE AND POSTURE?*

ELIZABETH BURCHENAL, B.L.
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Not very long ago I had the pleasure of reading some of the answers to an examination which was given to applicants for a certain position as gymnasium attendant. One of the questions was: "What would you suggest to correct a stooping carriage?" One man, who had evidently applied with the idea that "attendant" meant janitor, answered bravely and to the point: "To correct a stooping carriage, if going down hill, if there were such as a board I would throw it beneath the wheels. I would take off my coat, or if none on, would try to stop it the best I could." It would be interesting to know what he would have done with a graceful carriage.

The impressions conveyed to different persons by the terms "grace of carriage and posture" and "training in dancing" may be so varied that it is necessary, before discussing the effect of one upon the other, to make clear the sense in which one intends to use them.

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*Read before the A. P. E. A. Convention, April 17, 1905.

Dancing let us understand as that form of the art to-day which corresponds most nearly to the pantomime or the old symbolic dances — dancing in which the head, arms, and body take part in expressing by rhythmic movements the sentiment of the music.

During such dancing — call it gymnastic, æsthetic, or what you will — the entire body is in vigorous action and there is a continual flowing change from one co-ordinated movement or attitude to another, in which the fine balance of the body is kept by the compensating movements or positions of the arms, the free leg, the trunk and the head.

It is training in such dancing only that I shall speak of. Social dancing I have not considered, since it seems to me at best a limited form of physical activity which could have but little effect upon the general grace of the body as a whole.

Grace means to me *ease*, or freedom from effort; grace in carriage, a quality belonging to movements in general which are performed easily and with relatively little effort; grace in posture, a quality belonging to postures which are maintained easily and with little effort.

This coincides with Burke's definition of grace, which, he says, is an idea (not very different from beauty) belonging to posture and motion, in both of which, to be graceful it is required that there be no appearance of difficulty.

Spencer says: "We do not ascribe gracefulness to cart horses, tortoises and hippopotami, in all of which the powers of movement are relatively inferior; but we ascribe it to greyhounds, antelopes, race horses, all of which have highly efficient locomotive powers."

All these animals to whom we do ascribe gracefulness possess agility, fleetness and easy control of the body as a whole. Applying to human beings as well, I have concluded that if by any means these same qualities should be developed in an individual, his movements and postures would be characterized by gracefulness.

The question is then resolved to this: Does training in æsthetic dancing develop fleetness, agility and easy control of the body?

It is obvious that there can be no tangible or scientific proof that it does or does not, since there are no means of measuring or recording such things as agility, power of co-ordination and the like.

What, then, is to be done? Our only possible recourse at this point, it seems to me, is to consider the testimony of competent men and women who have been in positions which have enabled them to make extensive observations.

In order to have something beside my own experience to draw from, I have questioned the most highly trained exponents of the art, within my knowledge, in this country, and have secured the results of their observations upon themselves, as well as upon their pupils.

Some of the most interesting replies I cannot resist giving in full. Here is one: "It has had a very marked effect upon my own posture and also upon the postures of my pupils who have been conscientious in its practice. It has placed the head properly, thereby raising the chest. In walking it has given a more elastic tread and an easier propelling of the body. In running there is less effort, a quicker action, and consequently a more rapid movement. In jumping it gives a higher and longer jump and a more graceful alighting. In games requiring agility one is able to make quicker starts and stops and to change position more quickly and without loss of balance. It has trained the eye and quickened the action of the mind. Yes, it has given much fuller control of the body, as a whole, and greater ease and agility in action generally, both in my own case and among my pupils."

Another reply is from the head of the department of physical education in a normal school. "Classic dancing has done more than any other form of exercise to improve my own carriage, chiefly because so much stress is laid upon good poise in these attitudes and transfers, and because correct execution of the dances is impossible without correct posture. The 'sense of position' is trained with every movement. I have observed the same results upon pupils who have had a fair amount of this work. Classic dancing is pre-eminently co-ordinate work; it requires the harmonious working of mind, nerves and muscles; it requires perfect control, agility and skill. It must therefore make every muscular movement easier to perform, as it will make all reactions, both mental and physical, quicker and more accurate."

The following was written by an instructor in a normal school of gymnastics, who was graduated from a normal school of

Swedish gymnastics before receiving training in æsthetic dancing. "I cannot say that dancing has had any definite effect upon my own standing position, but I was already trained when I took it up. My habits of posture were already formed, I think. But on inquiring among girls who have not had similar training to mine I find that they believe it has improved their carriage immensely, especially in making them hold their heads up. In my own case I think it has helped my jumping and I am sure it has improved my social dancing a lot. Other girls say they can walk much better, presumably because they are in better physical condition, and feel less fatigue, and for that reason all the exercises you mentioned would probably also be easier, though not all of them had been tested. One thing in my own experience has interested me. I skate very little — about twice a year generally — but this winter's skating was much stronger and easier for me even without any practice, and I think it was due to a good deal of dancing in the past year."

The director of a normal school of physical training put my questions to the members of his graduating class, who have had three years of technical training in æsthetic dancing. He writes: "To the first question nearly all stated that they had been improved in their general carriage, in that they held their heads up and shoulders back. They also stated that many other exercises in the gymnasium had contributed to the same improvement. To the second question most of the girls stated that their ability to do social dancing had been greatly improved, and their ability to play games requiring agility was also greatly improved. As to improved ability to run, walk, jump, etc., they thought they had gained some power, in this direction, from dancing as a means of developing the leg muscles, but they thought also that walking, running and jumping had improved their ability to do classic dancing with more ease. I think they were united in saying that their training had given them fuller control of the body, as a whole, and greater ease and agility in action, generally. They were of the opinion, however, that many other exercises had helped in the same way, and found it difficult to say what was due to dancing and what to running, jumping and general gymnastics."

The last one I shall give consists of extracts from a letter written by an instructor who has been using æsthetic dancing alone as a means of physical training for young girls. She says: "I do not believe it cultivates a similar posture in every student, but brings out, rather, the individuality of each one. The freedom it gives softens the crude, awkward positions so universal among young people and helps the individual to 'find herself.' In my own case it has broadened and deepened the chest, removed the fat from waist and hips, and strengthened a weak back. My pupils improve rapidly in their habitual postures and the results are the same as in my own case. The training has made everything easier for me. With my pupils it has made a marked difference in their games and in social dancing; in the former, in quickness of perception, co-ordination and judgment, as well as agility and a power to keep their feet; in the latter, in rhythm and in a power to grasp combinations. The training has given me far greater control of body and much greater ease in general action."

In making a summary of all the observations secured I obtained

1st, A description of dancing upon the habitual standing posture rather than its effect upon posture in general.

2nd, A list of certain specific exercises which, through the effects of training in dancing, became easier to perform and required relatively less effort than formerly.

3rd, A description of its effect upon the body in action generally.

4th, The effects on posture were: Head and chest lifted, spine erect without stiffness, shoulders back, muscles elastic and not tense, absence of rigidity of any kind.

Does not this seem to approximate a posture which is free from effort or difficulty? And if grace of posture is, as I defined it, a quality belonging to postures which are maintained easily and with little effort, does it not seem that dancing may contribute somewhat to grace of posture?

Jumping, running, walking, skating, swimming, social dancing and games requiring agility were made easier by practice in dancing, and its effects upon the body in action generally were:

Power of co-ordination as shown by quick mastery of new co-ordinations.

Fuller control of the body as a whole.

Greater ease and agility in general action.

Are these not the characteristics of graceful carriage and are we not safe in concluding that training in æsthetic dancing does, to some extent, affect the general grace of carriage and posture?

MARKS FOR PHYSICAL EFFICIENCY.*

G. L. MEYLAN, M.D.

Columbia University.

Many attempts have been made in the past to measure physical efficiency. The object sought was usually the elimination from the military of those individuals who fall much below the average in size, strength, and vitality. The State could not afford to feed, clothe, and train a body of abnormal men who lacked the necessary physical stamina for the life of the soldier.

The physical examination of recruits is organized on a large scale in all the armies of the world. The essentials of the examination are fairly uniform everywhere. They are the stature, the weight of stature index, and the chest circumference — stature index, supplemented by a medical examination of the sense organs and vital functions. The standard for admission to the armies where military service is compulsory are necessarily somewhat low. No efforts are spared by recruits to secure exemption through simulation of physical defects and even willful mutilation.

There are many instances in history of the selection of bodies of picked men for important service demanding unusual physical qualities.

Napoleon appreciated the relation between a large trunk and great physical endurance. When he wanted a body of soldiers for some particularly arduous expedition, he ordered his captains to measure the waists of the men and to select only those with the largest measurements. Napoleon's keen powers of observation had given him the empirical knowledge that a large waist is usually associated with great vitality.

Some fifteen years ago, Francis Galton, the eminent English scientist, elaborated a scheme for assigning marks for physical qualifications. The tests suggested were: 1. breathing capacity; 2. strength tests (both of them to be regarded with reference to the stature and the weight; 3. quickness of response to a signal made either to the eye or the ear; 4. keenness of eyesight; 5. keenness of hearing; 6. color sense. His object was to find a trustworthy method for measuring physical efficiency from the standpoint of usefulness in the Civil Service and in business. He was one of the first to point out the financial loss to the government in employing weak and unsound men in the Civil Service.

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*Read before the Section on Anthropometry, April 17, 1905.

This principle has received wide application during the last fifteen years, both in England and the United States. Physical examinations are now required of all candidates for civil service positions in the national government; and the practice is extending to positions in the state and municipal government. The examinations of most applicants in the civil service at present include only a few definite measurements, usually the weight, height, chest circumference, pulse, eyesight, and hearing. No attempt is made to assign values for the observations. The only exception is in the physical examinations of candidates for the police and fire departments where nearly all the tests suggested by Galton are used, and definite marks for the physical tests added to the total marks received in the mental examinations determines the standing of the candidate.

Galton's suggestion of the value of physical examinations to business employers has been put into practice by a number of railroad corporations, dry goods store firms, and other large employers of men.

The most extensive application of the principle of assigning marks for physical efficiency has been made in physical training. The first attempts in this direction were made by the early workers in the modern movement who measured the girths of the main muscular groups and the chest expansion and compared individuals on the basis of these measurements. Size of muscle was believed to bear a definite relation to strength and muscular strength was regarded as physical efficiency.

The next step was the addition of the lung capacity as measured by the dry spirometer invented by Dr. Hutchinson. In the early eighties a man by the name of Brigham imported a set of dynamometers for testing the strength of various muscular groups and Dr. Sargent of Harvard, realizing the usefulness of such tests in measuring physical efficiency, included them in the physical examinations of Harvard students. These tests, which consist of the strength of each forearm, of the back, and legs, and the dip, pull up, and lung capacity, were soon used in other colleges and later were adopted by the College Gymnasium Directors under the name of the Intercollegiate Strength Test. This combination of seven tests is undoubtedly the best means yet devised for measuring general muscular strength and expiratory power in young men of high school age and older.

Those persons who are interested in physical training from the standpoint of psychology, found the Intercollegiate Strength Test inadequate for measuring those physical qualifications which are closely related to mental activities. They wanted to measure muscular strength, but they also wanted to measure time reaction to signals given to the eye and to the ear, accuracy of movements and purely mental tests, such as ability to repeat a number of words, mark some particular letter each time it occurs in a printed paragraph, and other similar tests. This phase of the subject, usually called psycho-physical tests, has been applied mostly to school children. Dr. Warner in England and Dr. Christopher in Chicago have been prominent in the application of these to school children. Professor J. McKeen Cattell of Columbia University devised a scheme of psycho-physical tests which has been in use for several years with the undergraduate students in Columbia College and the Schools of Applied Science. The students are measured in the Freshmen Year and again in the Senior Year. A valuable study of the results obtained was published by Dr. Clark Wissler in a pamphlet.

During the last few years there has been a growing feeling on the part of a number of physical directors that the Intercollegiate Strength Test is not an adequate measure of those physical qualifications which represent vitality. Great muscular strength is often found in individuals endowed with a large amount of vitality, but one of these qualifications is too often found without the other, to use either as a measure of the other. Furthermore, we are all agreed that vitality, or endurance, is far more desirable in modern life than great muscular strength. It is therefore highly desirable to devise a scheme for measuring vitality. Here again we are indebted to Dr. Sargent for pioneer work in devising a group of tests for measurement of vitality.

Dr. Sargent's test of strength, speed, and endurance, published in 1901, affords a better measure of an individual's physical efficiency than the Intercollegiate Strength Test.

Unfortunately the measuring of vitality is far more difficult than the measuring of muscular strength. It involves the repetition of an exercise until the group or groups of muscles involved are completely exhausted. Such tests when given to untrained individuals produce maximum effects of muscular soreness, accompanied by general discomfort, and in some cases fever and nausea. Few young men or young women are willing to go through endurance tests a second time. These difficulties have been experienced by every physical director who has used these endurance tests. The value of endurance tests depends on two essential factors: First, the individual tested must continue the exercise until his muscles are completely exhausted; second, the tests must be repeated after a season of physical training in order that the increase in vitality may be measured. In view of these conditions, it appears that we have a difficult problem to solve in devising a satisfactory test of vitality which can be applied to all students in educational institutions.

Another very important consideration in all attempts to measure physical efficiency is the principle that we should measure those physical qualifications which we endeavor to develop by the instruction we give in physical education. The attitude of educators and of students towards physical education is changing as a result of the improvements in the character of the instruction given in our college gymnasiums. The idea that the gymnasium is a place where students learn to swing dumb bells, perform various stunts and develop great muscular strength, is held now only by a few of the old men and women who are so set in their views and narrow in their ideas that they have not kept up with the changes which have taken place during the last ten years. It is an axiom that the purpose of education is the fitting of the individual for the civilization in which he is born. One of the essentials of an education measured by this standard is a healthy, vigorous body, with perfect subjective and objective control. All the exercises taught in our college gymnasium should be arranged and correlated with a view to reaching this ideal. Health and vitality are secured by participation in any scheme of physical training based on physiological and hygienic principles. The other qualifications which I have called subjective and objective control, are developed by means of well defined exercises with and without apparatus, arranged on pedagogical principles and leading to definite ends.

Granting that the instruction afforded to the students in our college gymnasiums is based on these principles and that physical education occupies the same position in the curriculum as English, Greek, and Mathematics, is it not essential that we devise some means by which we can assign marks after an examination on the degree of efficiency reached by the students? It seems to me that until we devise such a scheme we cannot expect to see Physical Education made an integral part of the curriculum, recognized and accepted as such; and not merely an appendix attached to the curriculum with so weak a connection that it requires explanations and apologies to justify its presence there.

The Intercollegiate Strength Test and Dr. Sargent's Endurance Test are not suited to this purpose. The acquisition of muscular strength is incidental and not fundamental in the physical education course which I have described; the strength test is, therefore, not suitable for measuring proficiency in such a course.

Vitality or endurance is an essential in the course described, but only a part of it; the Endurance Test is inadequate as a basis for examination because it measures only one of the qualifications developed in the course, and the application of this test is almost impossible.

In institutions where marks are assigned in physical education courses the marks are made up largely on a basis of regularity in attendance and deportment. This practice is undoubtedly a factor in fostering an antagonistic attitude on the part of students towards the required work in physical education. They look upon physical exercise as a drudgery or penalty and not as a regular course bearing credit.

A few physical directors take gymnastic skill into consideration in assigning marks; but gymnastic skill is not a qualification that we strive to develop in our students and therefore should not be assigned a mark.

In devising an adequate scheme for assigning marks for physical efficiency, it is desirable, so far as possible, to select definite standards which can be measured in mathematical units. All marks based on opinion are necessarily variable and unreliable.

I wish to present a tentative scheme for assigning marks for physical efficiency, based on the principles already considered.

Each individual is assigned a mark which is made up of three factors. The first is health; the second, vitality; and the third, bodily control. The mark for health consists of two elements, the first is an estimate of the individual's general physical condition as determined by inspection at the time of the regular physical examination. Five figures are used for this purpose, one representing the lowest and five the highest degree of health. The value assigned for this mark is obtained by multiplying the figure checked by ten. The second element is the total strength as determined by the Intercollegiate Strength Test. The value assigned to this is one-tenth the strength test total.

The mark for vitality is assigned on the basis of the number of times that the individual can jump to a hanging-rest position between two vertical ropes from the position of knee bent and arms straight, to the rhythm of once a second. Each jump counts one unit.

The mark for bodily control is based on four tests on the apparatus. The first is the running high jump. The purpose of this test is to measure the ability to handle the body on the legs. Three trials are allowed, the first at 3 feet 3 inches, the second at 4 feet, and the third at 4 feet 9 inches. The second test is the short underswing from the rings and over a cross bar with only one swing. The purpose of this test is to measure the ability to handle the body by the arms in the hanging position. Three trials are allowed, the first at 3 feet, the second at 4 feet 6 inches, and the third at 6 feet. The third test is a side vault over the low horizontal bar. The purpose of this test is to measure the ability to handle the body by the arms and legs simultaneously. Three trials are allowed, the first at 3 feet, the second at 4 feet 6 inches, and the third at 6 feet. This test is given first on the right then on the left. The values assigned for three tests of bodily control are ten points for each height cleared; that is, if an individual clears one height he receives ten; two heights, 20; and if he clears all three heights in a test he receives 30. The maximum number of points obtainable for the tests of bodily control is therefore 120. The maximum number of jumps in the vitality test is also about 120. In the mark for health the maximum would be usually 120, made up of about 50 for general condition and 70 for strength test. The total number of points would range from about 180 to 360. To reduce this total to the usual percentage mark, divide the total by 3.6 and the result will range between 50 and 100, the extremes used for assigning marks in other subjects.

I do not offer this method of assigning marks as a tried and true method, ready to use without modifications. The need for a scheme for assigning marks for proficiency in physical education led me to attempt a solution of the problem. It is very doubtful if the scheme proposed in this paper will prove adequate without modifications. But I feel confident that it is a first step in the right direction and that we must co-operate in an attempt to solve this problem in the near future if we expect to maintain the advantage already gained, and to make further progress in securing due recognition for physical education in the educational curriculum.

SUGGESTIONS AS TO ASSIGNING MARKS FOR PROFICIENCY IN PHYSICAL EDUCATION IN CITY PUBLIC SCHOOLS.*

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In 1894 Sir Francis Galton presented a paper entitled "Useful Anthropometry" before this Association. Following his statement of the need, I went to work and devised a plan of recording a person's physical efficiency on a percentage scale. This plan was based upon an examination of the chief, vital, and controlling organs of the body. It was sufficiently satisfactory, so that the work of different examiners presented a smaller probable deviation than marks given for success in scholastic lines. It soon became evident to me, however, that this mark in physical efficiency was not as serviceable as I had hoped it would be, because it failed to record advancement in those specific aims which are sought by school gymnastics and class athletics. This that I desire is not merely to record physical efficiency, but advancement in physical training. The plan which is suggested to-day aims to meet the following conditions:

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*Read in Section on Anthropometry, New York, April 17, 1905.

1. It aims to show progress in the particular qualities sought by school physical training.

2. It aims to so guard this examination that strain and excessive effort will give no advantage to the individual. Extreme attainment, with reference to strength and endurance, shall be of no advantage. Only that degree of attainment in these respects which is desirable shall be counted. Other plans seem to me defective, in that they give points for undesirable attainments.

3. The tests are such that they are best prepared for by the regular classroom work, rather than by specific training for the tests themselves. A test, which was based largely upon results from the intercollegiate strength tests, and the Sargent's endurance tests, would be best trained for by doing these specific exercises, rather than by doing any class gymnastics. Thus, the test would not so much show progress in gymnastics as in some other quality.

4. The test must be such as can be operated in classes of the normal size, during regular class periods, and without expensive apparatus. The test itself is not designed to be more severe than the more severe part of the regular daily work.

Those persons who are sufficiently sound, organically, to do the regular work shall be eligible to take the examination. The maximum possible shall be one hundred points, in accordance with the following schedule:

Strength and Endurance......	20 points.
Control	50 points.
Hygiene	30 points.
Total	100 points.

These points shall be awarded as follows:

Strength and Endurance Test — (20).

1. (10) The individual shall lie at full length upon his back, with shoulders directly beneath a bom, which is placed just within reaching distance. The chin shall then be raised to the

bom a number of times. The maximum of ten points shall be given for such a degree of attainment as should reasonably be attained by every person of the given grade; thus boys should have a higher number to perform than girls — upper classes a higher standard than lower classes. No additional credits shall be given to those who pass this medium point. This limit will not altogether prevent over-exertion, but will do so at least partially.

2. (10) That the points be awarded in accordance with the number of deep knee bendings that can be performed by the individual, there being a limit for each sex and grade, as already described.

Bodily Control — (50) This shall be divided into three parts:

1. Twenty points shall be awarded for the ability to pass an examination upon the work of the term in gymnastics, definite standards having been agreed upon as to just what work shall be covered by each sex and all grades of schools; the work to be marked in the same way that gymnastic competitions are usually marked.

2. Twenty points shall be given for the ability of the individual to successfully perform the athletic work assigned to the term, and sex. The difference in the marking, between the gymnastics and the athletics, is that in the gymnastics it is the form of the contestant that counts, and in the athletics objective attainment as shown in time and space.

3. Ten points may be given in accordance with the habitual posture of the student in the school, together with his posture during the examination period. It seems desirable to give some credit for good posture, even if it is only taken during the examination period, for this indicates that the individual knows what to do. The highest mark should be given only to the person who habitually carries himself well.

Hygiene — (30) This shall be divided into two parts:

Knowledge (10) It should be regarded as a part of the obligations of every teacher of physical training to give constant and consecutive discussions on the subject of personal hygiene, including the effects of exercise, posture, bathing, and so on. This work should not require any home study on the part of the pupil. Its success should be tested by a brief written examination at the end of each term, covering the talks given during the term.

Practice (20) This is applied hygiene. It should be based upon the daily record of the term. Theoretically such examinations might seem to be difficult—practically it seems to work out without any difficulty in our public high schools, where it has been tried. The points usually examined are the skin of face, neck, and hands; teeth, hair, collar, shoes, and general clothing.

It might appear, from the test proposed under *Control* (athletic and gymnastic), that the plan could be carried out only in schools where the daily work in physical training was identical. This is neither necessary nor desirable. What is proposed is that there shall be standards made which each pupil shall meet at the end of each term, and that each teacher shall be wholly free as to methods of training the pupils to meet these standards. Unless some such plan as this can be adopted, I see no opportunity for our subject ever ranking with other subjects in the curriculum.

METHODS OF ASSIGNING MARKS FOR PROFICIENCY IN PHYSICAL EDUCATION AT AMHERST COLLEGE.*

DR. PAUL C. PHILLIPS.

Amherst College.

In the treatment of this topic the writer will transgress the limitations of a subject, which refers only to local fact, in order to give a more comprehensive view of its relations.

The credit for initiating the giving of credit for work in the department of physical education does not belong to Amherst. Bowdoin College and Leland Stanford, Jr., University at the instigation of Dr. Whittier and Dr. T. D. Wood respectively had adopted the plan in the '90's and, in fact, when the statistics on the subject were collected in 1900 it was found that over twenty colleges and universities were using it in some form or other. The part of Amherst was simply the gathering of the facts as they existed in that year and disseminating them through the PHYSICAL EDUCATION REVIEW and otherwise for the benefit of those interested. No one was more surprised than the investigator himself at the conditions discovered. The reports showed a strong and increasing tendency to give credit in our colleges. As a result of the publication of the facts other colleges were induced to do the same, Amherst among the number.

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*Read in Section on Anthropometry, April 17, 1905.

The results so far as reported at that time, and in cases which have since come under our observation, have been very generally satisfactory to students, directors, and faculty.

Thoroughly as we believe in the plan under ordinary conditions in our college to-day, the giving of credit on a college diploma for proficiency in physical education is indefensible on any but practical grounds. The purpose of a college is to furnish education in certain departments of learning — as outlined in their catalogs — and attainments in these departments alone should in general determine the grade with which a student graduates. It was for this purpose that the college was founded and for this it is endowed.

It may be urged that there is no dividing line between so-called physical education and so-called mental education, that it is all education and so there is no incongruity in associating them on a diploma, and that, further, power is given to the faculty and it is competent to arrange the courses of study, hence they may include courses in physical education in the curriculum. Nevertheless, it is to be remembered that with men, and especially women of college age, the susceptibility to physical education is slight, that the golden age for the development of the motor area has passed and that other and more attainable ends are rather sought in gymnasium work.

Of course in the preparatory and public schools this argument does not hold good. The argument from the effect of improved health on the mental development may be adduced to show that for this reason recognition should be given physical education in the scholarship standing of the men. The facts do show indisputably that the health of college students is bettered by regular exercise and, moreover, that as a result they do better mental work. Yet to this we may reply with justice that if this is so the department of physical education will get sufficient recognition on the diploma by the enhanced mental work of those who come under it; and, again, that, even if it does help mentality, so do judicious food, sleep and other hygienic procedures; yet we should scarcely feel justified in letting these count, in any but an indirect way, on a diploma.

It is on practical grounds that the giving of credit has its chief justification (we are speaking now of work in physical education which is required, for only to men in such courses is credit given).

It is justifiable first because of the stimulus which it gives to many of the students to do better work in the department. Those stimulated belong chiefly to two classes, those who are striving for high marks in college, and, secondly, those who are very low in rank but would pass the course. Secondly, because of the assistance which it affords the director in the conduct of his department.

Here is an agency of the college which in many places has achieved the dignity of a department and which deserves that, or an equal recognition, for its work in the institution. This department is asked to require hundreds of students to attend its classes and do the work three or four times a week, twenty or thirty weeks in the year, and year after year, with no further stimulus than interest in their own bodies or the personal inspiration of the director. The novelty soon wears off and the zeal soon flags in most cases, but the constraint of the requirement still hangs over them.

No other department of college is asked to face such a proposition. As a matter of experience the students do better work with the credit than without it, and those who are most anxious for college honors and who frequently need the exercise the most, do most faithful work.

The justifiability of granting credit for physical proficiency will depend in part on how the marks are assigned. What are the conditions which should determine the method?

A. It is to be remembered that our colleges have set up no physical standards for the students applying for admission. The physical examination at entrance is given by the director, not to exclude those who are physically incompetent, but to determine what is the best line of exercise for them, once matriculated. Except in rare cases none are debarred. There being no admission requirement of physical proficiency it is manifestly unfair to make absolute health, or natural or acquired physical ability, the basis of our mark. Students show great variations in these respects, even in this age of physical development, and in spite of previous work in preparatory schools. For poor health or poor bodily education to prevent a student from obtaining honors due him by his intellectual attainments would be unjust. Frequently in a college course these defects cannot be remedied so that the individual can get even passing rank in physical education on an absolute basis, and for this student to fail for this reason would be absurd.

It may be answered that after entering college the students may be graded according to their physical proficiency. This is theoretically possible, but practically within the time limits of the college schedule — which is generally arranged by classes — it is very difficult. Moreover, there would be the added disadvantage of having to compare attainments in elementary with those in advanced grades, through all the four years of the course.

If, however, the marks are assigned on a relative rather than an absolute basis, no hardship is wrought on any student, for each is as able as any other to attend and make progress proportional to his ability. If, in addition, the work is adapted to the weaker students, the marking is simplified, because almost all can perform the exercises in a more or less creditable manner.

B. The main purpose of the physical exercise must also be taken into account. This we assume as the development of vitality, with correction and education only secondary. Bearing this in mind our marks must be assigned with due reference to those factors in the work which make for such vigor, namely, regularity of attendance and amount of work.

C. Practical considerations obtain also in the assigning of marks. Proper deportment must be maintained, by which we mean the student's response to discipline, his maintenance of good behavior, and his keeping of alignment. A fairly large mark here is helpful to the director and of value in furthering the rest of the work.

Since the giving of credit was introduced at Amherst, light gymnastics and marching only have been required of the Juniors and Sophomores; both of these and elementary heavy gymnastics for the Freshmen.

The marks have been assigned on the following scale:

For attendance	40
For earnestness and application	25
For deportment (military)..............	20
For proficiency	15
	100

From this valuation of each factor in the case it is evident that mere attendance will not give a passing mark, although on the regularity of it much of the good results depend. With fair attendance, if one is earnest and applies himself well, one may pass, and if his deportment be good, attain a good mark. Thus the student who is mentally brilliant but physically not proficient may by regularity, industry and good behavior attain almost 85%, and if a certain amount of proficiency exists, even 90% or over. The highest rank, however, cannot be attained except by the physically proficient.

This scale appeals to faculties for its fairness to the scholar and does not sacrifice anything of accuracy to all concerned.

The proportion of the 15%, which is given for proficiency, is determined largely, in the light gymnastics, by the form displayed, or the manner in which the exercises are done. In the heavy gymnastics it is decided by the approach, departure, difficulty of the exercise and form, as in competitive work. This is only one method of marking and a crude one, and it hardly deserves the prominence required by this topic. There are others which are just as good, probably better, and of those we would like to hear in the discussion.

A pertinent question, often asked by college faculties, relates to the amount of credit which will be given for work in the department of physical education and its proportional representation on the diploma. Some colleges give the gymnasium work equal credit with that of the recitation room where preparation is required. This seems to us too much. The more usual and fairer way is to put it on the same plane as laboratory work, *i. e.*, two hours of physical exercise to be considered the equivalent of one of recitation. The proportion the department would have on the whole diploma grade would vary with the extent of the requirement, varying from 1-90 to as high as 1-8 in various colleges. In some colleges the credit in physical education is based almost entirely on attendance. In a few colleges some theoretical courses are combined with physical education, as human physiology, anatomy, hygiene or physiology of exercise, and credit given for the whole.

THE OUT-GROWTH OF THE WORK OF THE COMMITTEE ON ANTHROPOMETRY, APPOINTED 1903.*

BY W. W. HASTINGS, PH.D.

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In discussing the results which have grown out of the work of the Committee, it will be conducive to clearness to state, first in outline, the objects of the Committee's work and the purposes which guided their labor, as stated by them in this report. In requesting a paper on this topic it was doubtless the purpose of your chairman to elicit a statement of the extent of the realization of these objects.

The Anthropometric Committee of 1903 was appointed "to revise the physical examination." The occasion for their appointment at Detroit was the recognition that measurements in many quarters had lapsed into disrepute and even disuse, because their primary function had become obscured. The taking of a long list of measurements which had little practical bearing upon the estimation of individual vigor, naturally caused even the tests which were of real value to be overlooked — by director and individual.

Lack of time for the work, combined with lack of interest in that which appeared fruitless, gave rise to carelessness and involved the whole subject of anthropometry in dispute.

The problem confronting the Committee was twofold, to place before the average director a brief form of physical examination which he would immediately recognize as of practical use, and to impress the necessity for uniformity and accuracy in observation.

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*Read in Section on Anthropometry, New York, April 17, 1905.

At the first meeting of the Committee at the Hemenway Gymnasium, in July, 1903, the basis for revision was determined. The immediate function of the Committee was deemed to be: 1. To provide *not a complete list* of qualities now regarded as commensurable; nor a complete list of those tests which are regarded as valuable. Purely psycho-physical and anthropological tests were omitted. 2. But to present "a *minimum list* of measurements and strength tests, containing the *most essential.* This decision was based largely on the demand of physical directors in many fields for a shorter list, which would require less time to take, promote accuracy in the taking, and give more time for the medical examination and the study of the individual."*† 3. It seemed inadvisable to attempt to modify this list to perfectly suit the requirements in the various fields of work." (Men's Colleges, Women's Colleges, Y. M. C. A.'s, etc.) "The Committee recommends, however, a list .for the public schools." 4. The basis for the selection of a test was primarily its practical value to the individual measured. "In the case of a few the preponderating argument was the interest of the individual in the measurement or test. Inability to change a measurement by exercise was considered a strong argument against its retention. Those measurements and tests which together formed the best index of the individual's organic vigor or vitality, were voted most valuable to him. Hence the large proportion of measurements of the body proper." 5. Emphasis should be placed on accuracy. To this end it was deemed essential to define the exact method of taking each test. It was hoped by this means to add value to the measurements as a means of physical diagnosis and of scientific investigation.

The foregoing purposes of the Committee were satisfied in the report presented to directors at large through the AMERICAN PHYSICAL EDUCATION REVIEW, June, 1904.

Practical results growing out of this report should be evidenced in a gradual improvement in the character of the blanks used in our various institutions. An investigation of college, preparatory school and Y. M. C. A. blanks, not only for the examining room, but for the whole physical department, is now in progress at the Training School, and will continue through the coming year. Nearly 1200 letters have been sent to educational institutions, over 300 to Young Men's Christian Associations. Replies have been received from 78 Young Men's Christian Associations and from 111 Educational Institutions. Blanks still continue to come in. Further requests for this information will be sent out this fall. The interest and practical assistance of every member of the Physical Education Association would be very much appreciated by the Training School.

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*See AMERICAN PHYSICAL EDUCATION REVIEW, June, 1904.

†The whole point of view may be secured by reference to papers on revision of the physical examination in the September and December numbers of the AMERICAN PHYSICAL EDUCATION REVIEW, 1903.

Examination of the material so far received has not progressed sufficiently to render possible any definite statements as to change in character of blanks, but three significant movements have been inaugurated during the past year which indicate with some degree of certainty a greater tendency toward uniformity.

The first group of physical directors to fall into line with this idea of emphasizing practical essentials in the physical examinations were those of the Young Men's Christian Associations. At the meeting of the Physical Directors' Society of the Y. M. C. A., held at Lakewood, June, 1903, the discussion of revision led to the appointment of a Committee on Physical Examination. This Committee met in New York City early in December, 1903, and outlined for publication the revised card system of physical examination, as stated in the AMERICAN PHYSICAL EDUCATION REVIEW, December, 1904.

Although worked out before that of the A. P. E. A. Committee, this revision agrees in the main with the purposes and conclusions of this committee. The objects of the Y. M. C. A. Committee, as stated in its report, were "to economize the director's time, and to make his work simpler and more effective, ... to select the *most essential* measurements and items of personal and family history from the point of view of determining the organic vigor of the man, and securing his personal interest . . . in brief, to concentrate the whole purpose of the physical examination upon the help of the gymnasium member."

Although worked out independently, the results of the two committees agree very closely. The Y. M. C. A. report omits from the list of measurements, Girth of Right Wrist, Breadth of Hips, Push Up, and Pull Up. It inserts Girth of Right and

Left Arms, Girth of Chest (Axillary) Contracted and Expanded in its list of optional measurements under "Special," it adds Shoulder Retractors to the list of strength tests. In taking Chest Breadths and Depths the Contracted and Expanded are taken instead of the normal, for the reason that these can be taken more accurately, and because they show whether the individual expansion is more pronounced in the lateral or in the antero-posterior plane. But the majority of the measurements are exactly the same, namely, twenty-three out of the whole number.

The Y. M. C. A. Committee have adopted as official the definition of technique of measurements prescribed by the A. P. E. A. Committee, as far as they cover the same ground. For other points of technique "Dr. Hastings' Manual is recommended" by the Committee in their first report by letter to the members of the Physical Directors' Society (March 2nd, 1904).

There are now over sixty leading associations using the blanks authorized by the Committee. The International Committee of the Young Men's Christian Association now exercise the exclusive right of sale of these blanks to the Young Men's Christian Associations. Between twenty-five and thirty Education Institutions are also using the blanks. The emphasis of a small group of measurements as "Vital" and the separation of these into a definite list has been found of great advantage by the Committee and by directors who are co-operating with them. The attention of the director is turned constantly to that which is most essential for physical diagnosis. The use of the "vitality coefficients" in the words of a prominent physical director of large experience, "has proved a liberal education in observing that which is essential in diagnosis." Unfortunately only a limited number of men have time for these coefficients.

But the most significant thing in the work of the Committee is to be found in their plan to provide a national type for each height of each age for boys 10 to 16 and for men 17 years and above. "The Committee proposes to gather the measurements of about 40,000 men of all ages above 17 years, and about 2000 for each age of boys."

These measurements are being secured from leading directors all over the United States. Accuracy in taking the measurements is emphasized. Fourteen thousand measurements are already promised, and duplicate blanks for recording these measurements have been sent out to the men who are co-operating in this plan.

Forty leading Young Men's Christian Associations have already promised duplicates, and about half as many Colleges, Normal Schools and Preparatory Schools. Fully as many more will probably lend their assistance this fall, San Francisco and West Side Branch, New York, are among this number, the latter will furnish boys' measurements.

Duplicate measurements for the year are to be called in June 1, 1905. The gathering of the data will require about two years, the work of calculating will begin this summer. (Fuller details may be found in the *American Gymnasia*, February, 1905, or by application to the Chairman of the Committee.)

A corresponding investigation for girls and women is being prosecuted by the Boston Normal School of Gymnastics with characteristic energy.

The work of gathering data was only begun this year, but already nineteen institutions of first rank are lending their coöperation and sixteen more have promised measurements this coming fall. The whole number of institutions co-operating should be doubled by October. The measurements of over 5000 different individuals have already been received, and between 5000 and 10,000 more are in immediate prospect. These will undoubtedly be obtained by summer, when calculations will begin.

It is the plan of the Boston Normal School to gather between 50,000 and 60,000 measurements in order that some results of permanent value may be obtained and published. The general plan of work for the preparation of this series of anthropometric tables will correspond closely to that of the Y. M. C. A. Committee.

Women as well as men in our gymnasiums demand that anthropometric tables present something of definite value to the individual *measured*. Vital measurements will therefore be emphasized and age-height tables be printed for all ages. Manifestly, tables based on individuals of all ages do not present a suitable type for one given age, for the data which forms the basis of such a table is of persons at all stages of development.

An ordinary percentile table based on individuals of one age is more homogeneous, but it does not provide a type to which tall and short persons can be expected to conform, since the individuals who form the basis of such a table are of all types of development. But a table which provides a type for each height of each age does present *real,* not *theoretical,* standards of development, and therefore standards which are of practical value to the individual measured.

These facts have recently been corroborated by the work of Dr. Phillips at Amherst College. "The study is based on 3785 observations of men in Amherst College from 1881 to 1904. It represents about 2700 different individuals, the remaining number being second and third observations on the same individual. . . . The measurements were taken largely by one man, Dr. Edward Hitchcock, Professor of Hygiene and Physical Education. . . . The sixteen items considered in the study were selected: (1) from their ability to indicate the vitality of the individual; (2) to reinforce and supplement the work of recent investigators; (3) for practical reasons."

The ages considered were from 17 to 22 inclusive. A comparison is made with my own types for 17 to 20 years (based on Nebraska, Massachusetts and Connecticut data), in which it is stated that this work at Amherst "has proved corroborative and supplementary in the new age limits and height divisions. The value of the results in establishing those norms whereby a man may compare himself with the type for his height and age, and learn also the normal variability thereof, is too evident to need statement here. (See "An Anthropometric Study of the Students of Amherst College to Determine the Norms for Different Heights at Each Age from Seventeen to Twenty-Two Years." Presented at the St. Louis Exposition by Dr. Paul C. Phillips, 1904.)

This paper is exceedingly significant in that the data which forms the basis of this investigation is very homogeneous; the emphasis is laid upon vital measurements and coefficients; and types have been provided which are of some value to the individual measured. It lends added encouragement to the two movements now on foot for the provision of national types for men and women respectively, of all ages.

In conclusion, it may be said that these three movements agree in following out the spirit and purpose of the A. P. E. A. Committee on revision. They emphasize brevity, the selection of measurements which indicate organic vigor, and the provision of a series of Anthropometric tables which are of definite value to director and gymnasium member. Their whole aim is to economize the director's time and to help and interest the individual.

MOTOR TRAINING IN ATAXIA.*

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Ladies and Gentlemen,—I have the honor to present to you the subject of Motor Training in Ataxia,—a rather extensive subject if taken in its broad sense of pertaining to irregularities of movement in any part of the body from any cause, or attended by any change or perversity of function of the motor mechanism. This, however, is not my intention, it would take too much of the time allotted to this brief paper, and I will confine myself to its more restricted meaning of tabetic or locomotor ataxia; in fact, this was the title originally given to the paper, but in printing the catalogue the word "locomotor" was by mistake left out.

This disease consists, as you are aware, in a slow degenerative process of the posterior portions of the spinal cord containing the sensory tract, causing there an increase of the interstitial connective tissue, with consequent interference, pressure, and destruction of nerve fibre, cells, and centres. It usually begins in the upper lumbar and lower dorsal regions, and extends upward and downward. The posterior roots of the spinal nerves are also involved in these sclerotic changes, and show gray degeneration and atrophy.

Besides the characteristic motor phenomena, which I shall describe in detail later, I will briefly call your attention to the most common of other symptoms. First we find—what may be expected—extensive sensory disturbances throughout the body of a varying character, chiefly that of numbness, and most prominent in the extremities. Another important symptom is pain, which also varies, but often is excruciating, lightning in character, shooting down the extremities, usually the lower. The functions of stomach, bowels, and bladder are much disordered, and a common symptom is the so-called "waist-band constriction," or the sense of a tight band around the waist. The abolition of patellar tendon reflex is considered one of the diagnostic symptoms of the disease. The muscles of the eyes are often affected, causing double vision or strabismus.

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*Read in Section on Therapeutic Gymnastics, April 27, 1905.

That gymnastics should suggest itself in a disease of this kind lies in its very nature, and the fact is that it was early tried by promoters of medical gymnastics in Sweden; and I will not omit to add, with some degree of success. If they did not succeed better, it had its reason, first, in the rather sparse knowledge of the anatomical lesion, and, secondly, in the discrepancy that seemed to exist between it and the peculiar motor symptoms of the disease.

The sensory symptoms of anesthesia, pain, etc., were easy enough to explain. There was the sclerotic lesion of the posterior fibres and roots of the spinal cord; that accounted sufficiently for them; but the motor symptoms — how were they to be explained? The anterior parts of the cord containing the motor fibres were apparently intact. There was no particular lesion of the brain to account for them. The theories that from time to time have been held forth have been many, all more or less unsatisfactory. I will call attention to the two more important classes or groups: (1) Those coming in under the so-called Central or Motor Theory; (2) those belonging to the Sensory Theory; a third, called the Psychic Group, is unimportant.

According to the first, the Motor Theory, the motor disturbance was thought of necessity to have the seat somewhere either in the brain or the spinal cord. The motor centres themselves were not thought to be this place, however, and it was referred to the supposed centres of co-ordination, which latter, in the absence of any lesion in the motor region, were thought to exist in or near the sensory tracts. The motor impulses were thus formed normally. They met, however, on their way down to the muscles, with some interference where they passed through the co-ordinating centres, or nerves, and this interference was the cause of all the modification in muscular performances observed in ataxic persons. This theory, however, is subject to serious objections. In the first place, we must assume the existence of centres of co-ordination, — a fact that as yet has to be proven. Further, any condition causing such interference, no matter what its pathological character, would hardly cause symptoms of a changeable nature; they would more likely be those of slowness and sameness and constancy. But this is not the case in locomotor ataxia; the symptoms change all the time; their characteristic is irregularity; they change continually, not alone in regard to force, but in speed and direction as well; there are complete interruptions, and yet, as a rule, there is no true diminution in force. As a theory, it will hardly stand scrutiny. — Now, let us turn to the Theory of Sensation. It tried to explain the phenomena on the basis of the pathological changes actually present. This was, however, difficult, nay impossible, as long as by sensation was only understood the sensation of the skin; but physiological experiments and researches have proven that the phenomena of sensation are not related merely to the skin, but to nearly all other organs, although somewhat different in kind and character. Now, so far as the motor apparatus is concerned, we speak, for instance, of a muscular sense, by which we are able to determine the state of contraction of a muscle, *i. e.*, the force, the speed and duration of contraction, which, furthermore, will enable us to know the state of any number of muscles working together in co-ordination, and still further, the place, position and condition of that portion of the body to which they are attached. By this muscular sense and the sensibility existing in joints, we are enabled, under normal conditions, to know the exact position of our limbs, or other parts of our body, even without the help of vision; and it is absolutely necessary that we should know it, since it is impossible for the will to direct proper movements, where the knowledge of the exact whereabouts of the parts to be moved is wanting. And in the ataxic person it is more or less wanting; sometimes in so mild a degree that the patient himself may not be conscious of it; sometimes, however, to such an extent that the patient declares that he is in absolute ignorance of the whereabouts of his limbs when he does not see them. Now, this explains many of the peculiarities of the ataxic movement.

In order to understand it better, let us recall a few of the parts concerned in the normal execution of movements. Generally speaking, the action is this: that while certain muscles perform the movement, other muscles act as supports; but both the moving and the supporting muscles are subject to continual changes; so that before a movement is completed new fibres and new muscles have successively come into play, while others, in similar succession, have ceased their action. This goes on so smoothly and with such accuracy, that under normal conditions it is impossible to tell where one ceases and the other begins.

Not so in Locomotor Ataxia. Here the movements are apt to be interrupted, and attended with short stops. The patient may thus, in stretching out the legs, do it in three or more sectional pushes. The same will be observed in other movements, particularly in ab- and adduction of the bent knees in the lying position. It is due to the lack of muscular and joint sensibility above referred to. When one set of muscles are through with their part of the movement, the patient is not conscious of it; further action ceases; the limb is not moved; the action of gravity breaks it out of its course before the impeded sensibility finally brings it to his notice, when he tries to correct it and proceed with the motion.

Another peculiarity, observed particularly in the first stage of the disease, the so-called pre-ataxic state, is a certain stiffness or tension of the muscles above the joints, increased when the patient attempts to stand or walk with eyes closed. This phenomenon is instinctive, but at the same time quite voluntary of origin. Why is this so? First, because it adds to his security of motion; secondly, because the strain of his tendons enables him to feel better the position of his limbs and joints, — a condition, however, which naturally taxes the patient's strength greatly on account of the extra power that he is compelled to exert.

Next we observe a tendency in ataxic persons to perform quick movements. When they walk, they throw their legs out quickly and to the side. This is because they instinctively try by quickness of motion and by keeping the legs apart to overcome their unsteadiness.

Another peculiarity is the suddenness and the quickness with which they fall. Apparently they fall without the slightest notice. The explanation is easy, however, when we remember how difficult it is for them to know and to keep control of the exact position of their knees, and thus when it happens that these become flexed, ever so little, unguardedly, down they go before they have time to recover and restrain the downward movement, having the force or power to prevent this, when used in time. To guard against this accident, we find that tabetic patients keep their knees hyper-extended. But examining more closely, we observe further that this hyper-extension is often of an abnormally large degree, *i. e.*, more than it is possible for any person normally.

Here we come to still another peculiarity, always present in greater or less degree in Locomotor Ataxia, viz., Hypotonia,—a strange, loose, or lax condition of one or more joints. The name was given by Dr. H. S. Frenkel of Heiden, Switzerland, of whose exercises or training system for Locomotor Ataxia we shall hear presently. Hypotonia is due to a partial or total loss of the natural tension existing normally in all muscles, and which we know serves to steady and support the joints, both when in use and when not in use. The ligaments have nothing to do with it, since the same condition is observed in joints immediately after death. In the knee it occurs chiefly as hyperextension, due to slackening of the flexor muscles, but may occur in both flexors and extensors of any joint, even in the back, often making it possible for these patients to perform unusual feats; for instance, lying on the back, they can, with the greatest ease, raise their legs with straight knees, upwards and backwards much farther than normally, even so that their toes may touch the pillow upon which the head rests. It has nothing to do, so it is claimed, with the ataxia itself, but occurring as a complication and being always present, adds to the difficulty of maintaining certain positions and in the execution of movements, the extraordinary excursions and deviations of which are further increased and made even more irregular.

The man who has recently gained much prominence, and deservedly so, in regard to the gymnastic treatment, is Dr. H. S. Frenkel, above referred to, whose new system of compensatory training, Therapy, has achieved important results.

To call his method a new system is not entirely correct, as the exercises do not differ from those employed ordinarily in therapeutic gymnastics; but the manner in which they are employed, and the selection of exercises, are new, and came as a natural consequence when a truer and better understanding of the character and pathology of the disease was reached; in fact, without wishing to detract one whit from the fame of Dr. Frenkel, I cannot help saying that I was much struck with the similarity of selection and execution of many exercises employed by me since my adoption of the Sensory Theory of the disease, when, a few years ago, I had occasion to compare them with those described by Dr. Frenkel. This only goes to show that, having the same conception of the disease and using the same gymnastic system, the exercises and the manner in which they are performed will always be alike in character.

As to the possibility of re-establishing function in the pathologically changed parts, *i. e.*, the posterior sensory tracts, we know very little. It does not seem possible, at least where a total destruction of nerve tissue has taken place; but the training method of Frenkel, which is symptomatic in character, does not concern itself much in speculation on this point. He reasons like this: The chief property of nerve substance is its power to receive impressions from the outer world and retain them and store them up, so to speak, and to be able to make use of them in the future, when required. This is accomplished, first, by giving strict attention to the matter, be it of a physical or mental kind; secondly, by having it repeated the requisite number of times until acquired or learned. Now, this is what we ordinarily term "learning" or "education", and when employed in reference to bodily movement, it seems that, in order to obtain the faculty of performing a certain movement, we must see it, study it, and try to do it; then repeat it until learned, when it becomes our property. In support of his theory of training exercises, Dr. Frenkel says that this is really the way all co-ordinated movements are originally learned. At birth a child's movements are most irregular, but by repeated trials it finally learns to direct and master the movements of its limbs, learns to creep, to hold on, to walk, etc. By perseveringly trying a movement over and over again, we know also that most astounding feats can be learned; for example, the wonderful performances of acrobats, the masterful use of the feet and toes where hands have been lost, the extreme fineness and delicacy of touch of the blind in compensation of lost sight, — all showing the possibility of increased perfection and utility of other faculties in compensation of those lost.

Now, this property or power of the nervous system of learning or training ourselves up to something, is what we make use of in the treatment of locomotor ataxia. We start in to train the patient,—we teach him to perform movements that he has lost, beginning with simple and easy ones, going from them, when learned, to more difficult ones, and thus by degress reestablish what he has lost as far as possible.* In this way, by making better use of what sensory fibres he has left (and there is no case where all forms of sensation are lost), he will by degrees learn more and more, better and better.

In the beginning, and in severer cases always, the patient will be obliged to make good use of his sight, as this is his easiest compensatory means, and in bad cases his chief one.

To begin with, let me give a few simple general rules for the performances of the exercises. They must be executed with the greatest accuracy and precision possible, especially trying to avoid any stops or interruptions until the movement is completed. The movements are to be repeated daily until learned. Quickness of motion, to which there is a strong tendency, must not be allowed until in the latter stages of the treatment, when slow motions are well mastered, and speed comes into consideration as part of the treatment. The exercises must never be prolonged or repeated so often as to tire out the patient, and it is imperative at all times, particularly in the erect position, that he be well guarded from falls and injury.

Now, for the exercises themselves. In a brief paper like this, obviously I cannot go much into detail, and it would also be uninteresting to most of my readers. The exercises, so far as the lower extremities are concerned, are performed either lying down, sitting, or in the erect position.

The lying-down exercises are the easiest to perform, because the weight of the body and its balance are eliminated; even the weight of the legs may be eliminated by holding the legs suspended by the hands of the attendant or by straps from a suitable apparatus. At first they consist of the simplest form of movements, such as bending and stretching of the leg; to make it easier, the heel at first being allowed to rest upon the bed, later without touching it. The patient is then made to try more difficult ones; for instance, passing the heel of one leg along the edge of the tibia of the other, at first touching it with the heel, later without; then he is told to practise placing his heel at certain designated points, for example, on the knee, then on the middle of the tibia, then toes of the other leg, to do which latter he will have to bend the knee of this leg a little; similarly he may be told to place it under his other knee, at some place on the bed, in the physician's hand held at different places and heights, and so on; likewise he may use his toes for touching, instead of the heel. Ab- and adduction are also practised in the lying position, either with straight or bent knees; in the latter position, interruption of movements is most apt to occur. As the patient improves, more difficult movements and combinations of movements are tried: for example, bending one leg while the other is stretched out, keeping one leg bent while the other is being ab- and adducted, drawing both legs up while trying to hold a handkerchief between the feet; in this latter movement the sense of touch is brought strongly into play. Until now the patient has been supposed to see the movement of his legs. At the proper time he will be required to try the movements without keeping his eyes on the legs.

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*A method, by the way, not different in principle to that of ordinary school gymnastics.

The sitting position is not so well adapted for exercises as the lying and standing, on account of the limited excursion of the legs possible. The exercises will be similar to those in the lying position, besides which, the patient has the opportunity to make his feet familiar with touching the floor, for the furtherance of which he is told to practise putting his feet down with some force. In the sitting position the ataxia of the adductors is well observed, as the tendency is for the patient's knees to fall aside so as to cause the feet to rest almost on their outer edges.

One of the hardest problems for the tabetic patient is to stand up from the sitting position, and to learn this will require prolonged and careful practice. His tendency is to go backwards when he makes the attempt to stand up; he prefers to have the back of his legs touch or lean against the chair or bench from which he rises, so as to get some support from it and be sure to have it right back and under him in case he should fall, —

what he always fears,—and lastly because the touch of the chair enables him to know the position of his knees better. But this is about the poorest way he can select to get up; the principle of the movement must be explained to him; he must be told that in order to rise slowly, the point of gravity of his body must be directly over his feet, and to accomplish this he is told, first, to move his feet a little back and under him, then he must bend his body well forward, and then raise his seat from the chair. In this manner he will have the point of gravity almost directly over his feet, even before he leaves the seat, and with very little accommodation he finds his balance at this point, and not until then is he to straighten up. Patients usually understand and appreciate the correctness of this mode of performing the exercise; yet it may take them considerable time before they can actually master it.

The exercises in the standing position are, first, to train the patient to keep his balance in the main or fundamental standing position, with heels together, feet forming a somewhat less than a right angle, keeping his body straight, shoulders a little back, chest expanded, and looking straight ahead, the arms hanging alongside the side of the thigh. The different standing positions are then practised,—one foot forward, sideways-forward, sideways, sideways-backward, backward, and even crossways-forward-and-backward; his attention is called to the fact that he must rest equally on both feet,—a matter not easily accomplished, as one leg is usually affected more by the ataxia than the other and less to be depended upon; wherefore the natural tendency is to make use of the better one as much as possible; a constant over-use in this way of one leg and under-use of the other will cause the proportional strength and ability of coordination in the two legs to differ very much, and this is apt to increase rapidly. I need hardly mention that it is the weaker and most affected parts that will always receive the chief attention, with due care, however, to the amount of exercise they can endure without becoming tired. Next may be practised raising up on the toes, bending the knees, etc., in the different positions; the floor is often marked so that the patient can know exactly where he is wanted to place his foot. This is even more important when he comes to the walking exercises. Before these are attempted he is made to perform balancing exercises,—

resting on one foot, taking a step forward or backward, and he is taught to shift the weight of his body with the motions from one leg over to the other; later he is made to take two or more steps, at first slowly. As an initial exercise, he may be made to walk sideways, as this is easier than forward, during which he must note carefully the way the body is balanced during the different phases of the movement. As he goes on improving he has to practise walking without looking at his feet, walking along a line, over obstacles placed in his way, with measured steps, etc.; he is taught how to change his direction, walk backwards, and so on. When he can walk slowly, it may be well to practise quicker and more rapid walking and marches; the patient should be drilled like a soldier. Where two or more patients are affected about the same, and so much improved that there is no danger from falls, they can very well be drilled together; otherwise it is better to exercise the one while the others rest and look on. As before mentioned, it is important that there should be plenty of intermissions for rest; the patients who rest will also learn from the instructions received and mistakes made by others. When ordinary marches are well performed, it is time to try toe marches and running marches, even jumping, walking up and down steps and staircases. While doing marches, let them hold their hands in different positions, give them things to carry in their hands, on their backs, even on their heads.

Exercises of the upper extremities will have to be modified so as to conform to their natural movements and uses. The ordinary free exercises — arm-raisings, bendings, stretchings in different directions and planes, circumduction, etc. — are indicated.

Exercises to place hands and fingers on designated spots are of first importance. This may be made more interesting by encouraging the patient to play games, where these things have to be practised as part of the game; for example, chess and checkers. There is a great variety of schemes for such exercises; for example, placing pins in holes on a board, the piling-up of coins or chips, exercises and plays with balls suspended from strings, etc. Ordinarily, free standing and other gymnastic exercises where the positions of the trunk and arms and legs are changed, are naturally very useful, and should be directed in accordance with the condition of the parts affected by the disease.

They may, for example, be used with good effect in the training of the muscles around the hip-joint, which are commonly much at fault.

Different sorts of apparatus have been designed to facilitate the practice of training exercises. I will only mention a few of the best; for example, parallel bars placed at the height of the hip-joint, and resembling the gang-plank of a steamer; sometimes they are placed in the shape of a cross. The patient will here be able to steady himself by the hands, and to practise exercises alone, depending for his support upon himself solely, which otherwise may be impossible. It likewise gives his hands good training. This is, however, only an intermediate stage of training, and should be given up when no longer necessary. For bad cases, even those in the so-called paralytic stage, a broad belt to fasten around the waist is often used; it is supplied with wooden handles for the attendants to take hold of, making it possible to practise walking exercises with security.

Besides the exercises described, I make use of resisted exercises to a certain extent. I find that patients perform them uniformly better than the unresisted, the resistance adding to their conscious knowledge of their limbs.

Bearing in mind the free anastomoses of the circulation of the spinal cord and its surroundings, with the vertebrae, and even the muscles of the back, I believe in the efficacy of massage and movements of the back and trunk, active as well as passive. They will serve to assist and to free blood and lymphatic circulation, relieve existing congestion, and cause any possible repair to take place. Massage of the limbs and abdomen is of benefit, and may be advantageously applied during the intermissions of rest between the exercises.

In conclusion, I will say that the length of treatment, and the improvement to be expected, depend upon the stage of the disease and the courage of the patient, and his aptitude for learning and the work he puts into it. It will always have to extend during a number of weeks, even months. Two short treatments daily are better than one long one. The extent of inability to use the limbs does not always indicate a measure for the improvement to be expected. Dr. Frenkel reports one of his most brilliant results in a case thoroughly helpless. I myself have had similar experiences. The greatest importance in the treatment rests on patience and perseverance and the observation of precise execution of details; and a good result may always be looked for with a knowledge that the progress of the disease has been arrested.

THE DANCING FOOT.*

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At the stroke of twelve to-day, as on every working day in the year, all the windows in a certain factory will be thrown open and six hundred women and girls will begin their noon recess by five minutes of vigorous dancing. They voluntarily give this time to dancing because they thus get a great deal of exercise in a short time; it brings all the large muscle groups into action; it sends the blood circulating, and aerates the lungs; it affords a restful contrast to their monotonous or cramped occupations; and lastly, it is good fun. It would be hard to choose a better mental tonic and physical invigorator; it brightens the recess, and makes the whole day count for more. These are excellent reasons why the women of every factory and every shop in the country should do the same, and it will pay their employers to see to it that the opportunity is provided.

And let it not be forgotten that there is an important system of factories, exempt from the state laws limiting the employment of minors, whose hands are numbered by millions, whose product is called mental training, and whose by-products are varying degrees of physical incompetence, debility and deformity. Here also we find imperfect ventilation and lighting, monotonous and cramped postures and employments rigidly enforced, and all these evil conditions intensified by reason of the tender, plastic, growing and active, hungry bodies of the workers. The disease is practically the same; no radical remedy is suggested, and physical training steps in as a palliative measure. It would seem that here also dancing had much that is helpful to offer, standing at it does, midway between formal gymnastics and games; more closely allied perhaps to the former in its movements, to the latter in its spirit.

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Originating in the spontaneous movements of exuberant spirits and in expressive pantomime, dancing came to have important relations with education, with the drama and with religious observances. At the present time dancing may be roughly divided into spectacular, including stage dancing, which inclines to the bizarre and extravagant, and social dancing, which inclines to the inane. As the latter became more formal and more serious, it lost something of its expressiveness, more of its freedom and most of its joy; and modern social dancing has largely degenerated into insipid and pointless rhythmical movements, useless as physical training, whatever their social value. Edward Scott, an English authority, states that the general style of dancing which characterized the closing years of the nineteenth century, both as regards public and private practice, is simply idiotic; while Max Nordau calls dancing a fleeting pastime for women and youths. The latter's prediction that in its last atavistic survival it will be the recreation of children, will, let us hope, prove true in the better sense of re-creation.

It is evident that if dancing is to become an important factor in physical training, it must itself experience a renaissance, of which, fortunately, signs are not lacking. The dancing of the stage or of the four hundred has but little to offer to the six hundred of the factory or to the millions of the schools. The spontaneous recreative and expressive elements must be selected and combined perhaps in the spirit of the Rondes and Reigen of folk dancing, and wedded to correct gymnastic principles, and great credit is due to those earnest and clear-sighted teachers who have already done and are still doing so much in this direction. The new dancing must be hygienic, it must conform in matters of dress, ventilation and fatigue, to the laws of health; it must be gymnastic, it must be recreative, it must be expressive, and it must illustrate the highest standards of beauty.

Rational dancing as a part of physical training should conform in its postures and movements to the laws and principles which govern rational gymnastics. Attitudes of relaxation should not be employed in working parts nor attitudes of stress in relatively quiescent parts. Habitual postures of the trunk and limbs should avoid visceral cramping, and favor freedom of movements and a ready control of the larger muscle groups; the tempo should be suited to this expression of the action. The movements should be as delicately correlated as the movements of the billiard player, where the least stiffness is as fatal to grace as to accuracy.

In order to secure stability and easy control of movements, and to avoid undue strain, proper foot postures are of the greatest importance; incorrect foot postures cause unsteadiness, stiffness and imperfect co-ordination of the whole body, and certain foot postures, especially those where the line of incident weight falls to the inner side of the great toe and which may be shortly described as out-toeing postures, tend to weaken, not only the base, but the foot itself, particularly such feet as are already weak, of which there are so many in cultivated communities.

Each foot is a sort of tripod, the important supporting points being the middle of the heel and the outer and inner pillars of the anterior arch formed by the heads of the 1st and 5th metatarsals.

When the heels are raised the weight is borne on the pillars of the anterior arch and the ball of the great toe, the whole forming a lesser tripod or minor foot. The feet and lower limbs are bound and limited in their postures by their supporting functions, which dominates their mechanism and movements, presenting in this respect a marked contrast to the hand, which not having to support body weight has far more freedom of movement and power of adaptation and expression.

The foot in action as a support, and the unweighted or relatively resting foot must be sharply distinguished.

The resting foot has far more liberty of posture, and its relation to other parts is oftener a matter of taste, but it is of the gravest importance that the supporting foot should be in all postures so placed as to support the superincumbent weight with steadiness, counteract the tendency to fall, and facilitate proper action of joints and muscles and preserve its own integrity.

The fundamental law of equilibrium of solid bodies at rest, is that the base must be such that a vertical line dropped from the center of gravity shall fall within it. The base is bounded by lines connecting the outward points of support.

We are to remember that in the human body the center of gravity may be differently placed in different postures, and that the base is adjustable. When in motion the relation of center of gravity to base is such that the requirements of the law of equilibrium may be quickly complied with and leverage properly opposed to momentum as the body comes to rest. Momentum virtually shifts the center of gravity towards the direction of the movement.

The correct posture of the foot in dancing, subject to the fundamental law of equilibrium, is largely governed by three general principles, which may be called: (1) the principle of change, to avoid fatigue and overstrain; (2) the principle of advantageous mechanical purchase, to insure stability; this includes in some instances a readiness or preparation for movements to follow, and may be modified by a preceding movement; and (3) the principle of the narrow base, to insure freedom and grace of movement.

One of the great advantages of dancing is that it naturally and inevitably fulfills the law of change. The human machine is built for activity, and, in the standing posture, mainly for progression. Standing, especially symmetrical standing, as in the first gymnastic posture, is both difficult and dangerous for the foot and for the organism. Certain asymetrical postures, as with the weight borne on the straight, active and supporting foot, the other side being relatively passive, have important advantages, since the two extremities may be alternately brought into play, as in walking, an exercise which may be practised to any reasonable extent without harm. Dancing presents the enormous advantage of an active rhythmical progression, which practically omits standing and gives the lower limbs a variety of movements or series of movements, with right and left alternation.

Even with standing still reduced to a minimum, however, the weight of the body must still be upborne by the feet and in what posture or postures should the feet receive this incident weight? The fundamental general principle seems to be, that the supporting foot, and it is generally and normally one foot or mainly one foot, should in any given upright posture be directed in such a manner as to most directly and powerfully oppose the thrust of the body, *i. e.*, its tendency to fall in a particular direction. The supporting foot should not assume postures of relaxation, and it should particularly avoid the everted or pronated posture, other things being equal, as the inner side of the foot is the more flexible and the more vulnerable, and requires the protection of a favoring posture. Note well the expressions "active," "working," or "supporting" foot, for the foot which is relatively passive, the "Spielbein" of the Germans, is not subject to this law and may without offence assume a great variety of postures. It may present almost any angle of divergence to the working foot, and it may assist to a greater or less degree, or not at all, in forming the base of support.

Persons with strong feet, especially primitive unshod people, mountaineers, skilled walkers and runners, and young children, walk with the inner borders of the feet nearly parallel to each other and to the direction of motion. The best sculpture, both ancient and modern, shows the straight supporting foot, which in standing, as before stated, is not necessarily parallel with its resting mate. A normal standing posture is the arrested step, with the weight over the forward straight foot, its direction being practically coincident with that of the motion, arrested or imminent, because the tendency of the body is still to fall forward as in walking, and this straight foot posture gives the most purchase or resistance, in other words, the greatest stability. If the foot be turned in or out, there is at once less stability, and diminished control of the bodily movements. The mechanical conditions for joint and muscle function of the lower limbs are, also broadly speaking, most favored in this posture, which therefore favors the most graceful and effective posture and lines of the trunk and limbs. In this kind of standing the base may be an irregular tripod, the base and ball of the supporting foot representing two legs of a stool, the resting foot representing the third leg, or like the weighted outrigger of the Malay boat, as an aid to balance in some appropriate position at the side. A modification of this posture is seen at the end of the fencer's lunge, and in analogous postures in boxing and skating, where the weight is borne on the straight forward foot, the knee being bent. The direction of the foot here coincides with the direction of the thrust, but not with the sagittal plane of the body. The rear foot in the lunge is at right angles to the forward foot and to the direction of the thrust to insure lateral stability, and to avoid undue ankle-flexion, and it retains this posture in the recovery, when it becomes the supporting foot, as a preparation for the finished lunge, which is the critical posture of the series. The posture of the rear foot illustrates how the principle of greatest mechanical purchase may be modified by an important movement which is imminent. It may also be modified by a movement which is passed, as in the foot postures at the end of the golfer's drive, in which the main stress of the movement precedes the final posture, and its momentum carries body and foot past — a posture, so to say, of choice. Another modifying principle is that offered by the mechanical construction of the limbs, which is mainly adapted to more or less forward progression. Even in walking backward the body must be inclined forward, and more inclined forward than in forward walking to counter-balance the backward momentum, the feet are in the line of the thrust but of course directed forward, not backward, and the body still tends to fall forward.

The influence in stability of a correct base is well seen when standing on one foot and swinging the opposite leg backwards and forwards. This is much more difficult, if the supporting foot be turned to one side.

In forward and backward movements then, it seems pretty clear that the foot should as a rule be nearly straight, and this seems to hold when progression is upon the balls of the feet, the heels being raised when the great toe metatarsal tripod comes into action. This is in fact the practice of the runner, who finds it extremely awkward to run with the toes turned out, even though the heels never touch the ground. A stilt walker or a small-footed Chinese woman, where the mechanism of the foot is practically eliminated, still walks with the knees forward, that being the posture, where, other things being equal, the joints and muscles of the leg act best.

In vertical movements, when the weight of the body is raised or lowered in the standing posture, and the weight is supported on the minor foot, the thrust is again forward, as illustrated by the impossibility of rising or standing on the balls of the feet when the toes are in contact with a vertical wall. When such a movement is executed free the body inclines forward, and this forward thrust is met by the straight, great toe of the lesser tripod.

If one attempts to hop on the everted foot the body is instinctively turned in the direction in which the foot points until the foot is directly opposed to the thrust. If this is not done the hop is exceedingly unsteady.

We found in photographing children in unilateral standing postures, that they could maintain a steady pose twice as long with the straight foot as with the everted foot.

In movements directly to the side, especially in the gliding or sliding movements of dancing, it is not necessary to point the foot in the direction of the lateral motion, for which the structure of the leg is poorly suited, particularly when the weight falls over the center of a broad base formed by the laterally separated feet. The feet, pointed nearly in the sagittal plane in this case, rather than in the direction of motion, are always and instantly ready for immanent forward and backward movements.

In many of the dancing steps, however, each side step ends in a unilateral stance, to use the golf term, the weight being as usual over the forward straight foot. In straight foot dancing, the feet follow the body as much as possible, not precede it as in some conventional dancing steps.

Forward and backward movements are prepotent, and being registered in bodily structure, they exercise a modifying and assimilating influence on movements in other planes. The thrust of movements in various planes is more or less modulated and transposed into a forward thrust, the one most easily manageable by the bodily mechanism.

In primitive life the great somatic activities were pursuit, opposition, flight; all forward activities; the foot was developed for the forward or straight posture to meet these fundamental requirements. Modern activities are still largely activities of forward progression, or when these are curtailed the integrity of bodily function and structure is threatened. The foot, much weakened by its cramped and narrow life, must all the more meet the largely predominant forward thrust of life in a straightforward manner, which is the safe way, the normal standard, only to be modified for sufficient cause to meet exceptional and special cases.

That such exceptional cases may arise in some of the movements of dancing, or that other laws may modify at times the principles laid down, is quite probable, nevertheless it seems safe, rational and important to recognize this principle of the straight foot or greatest purchase in gymnastics and dancing, and that the failure to do so tends to strain and weaken the foot, damage posture and vitiate movement.

The third principle, that of the narrow base, is specially applicable to dancing and has been recognized and regarded by many teachers. In rapid movements of the feet, and particularly in turning and whirling movements, other things being equal, more freedom and more detachment is afforded by a small and narrow base than by a broad one. This is exemplified in mechanics by the bicycle and the top. The tricycle is more manageable than the four-wheeler, and the bicycle than the tricycle, provided there is momentum; like the human body, the bicycle was made for forward progression. A boy skates more gracefully on two-wheeled skates than on four-wheeled ones, and on ice skates better still, provided he be sufficiently skilled, that is, can make quickly the proper automatic or semi-automatic adjustments. This principle is too obvious to require much elaboration, and does not conflict with the preceding ones.

The principle of effective leverage was first applied to dancing, so far as the speaker is informed, by our fellow member, Mrs. Minnie Dwight Rouland, who began her classes in straight foot dancing some twelve years ago. After observing her classes for several years, the results obtained seem to me superior in the following respects:

1. Its movements are gymnastically more correct; as a consequence it produces more graceful lines and postures and gives better control of the movements. Children trained in the authorized dancing are frequently very stiff and awkward, and these same children in numerous instances have become supple and graceful under the straight foot method.

2. It is more invigorating and far less fatiguing. Children frequently dance over two hours without showing signs of fatigue.

3. It is more expressive of the rhythm of the music, and the interest of the pupils both in the music and in the dancing is greater.

4. It is better fun and is more enjoyed than ordinary dancing.

5. It is the natural method and the one which skilled and graceful dancers tend to practise in proportion as they become skilled and practised. Pupils learn under it to be good dancers far more quickly and surely than under conventional methods.

In a word, it seems to satisfy in an unusual degree the pedagogic, gymnastic, recreative, expressional and æsthetic requirements.

The term standing may be contrasted with walking or running, the emphasis being in the absence of movement, or on the other hand standing may be contrasted with sitting or lying, the emphasis being in the supporting function of one or both lower limbs, and the upright posture.

The word posture itself may, and usually does, imply a pose, which may be maintained without change for an appreciable time, but there is no other term for the instantaneous glimpse or snap-shot of the relation of the bodily parts at a moment of action, which rapidly pass and flow into each other.

CLASSIC DANCING.*

M. B. GILBERT.

Boston, Mass.

We can hardly consider any one kind of dancing, without referring to or giving some little attention to its adjuncts; consequently we shall touch lightly upon complementary subjects, that we may better approach the principal one. We ask you to follow us to well directed points, and will try not to weary you with too much history or with an elaborate treatise upon the art, or a lengthy argument in its support.

We all, as respects our knowledge and ability, stand upon the experience of earlier races, and popular progress could not be imaginable, if we treated the arts and sciences as mere empirics.

Among the ancient Greeks, all gymnastic exercises, and especially dancing, formed the leading element of the education of youth. High and low, old and young, cultivated this art. According to Plato, the man who found no pleasure in dancing and gymnastics, was a rude, unpolished clown. The great value the Greeks placed upon these two arts, is evident from their assiduous cultivation by their greatest men.

Montaigne, the French essayist, says: "I would have an outward decorum and pleasing manner cultivated at the same time with the mind. It is not a soul, not a body, we educate; it is a man. Out of this one we must not make two." We must not break in one without the other; but must urge and guide both alike. Dr. Jacobs expresses the idea of Greek gymnastics by saying that their one great aim was to secure the mastery of mind over body, and represent the internal harmony in the inward and outward appearance. The body is the medium through which we communicate with the outward world. If we would realize our intentions, we must make ourselves capable of rendering this subjectivity into outward objectivity. The body is not naturally fitted for this; it conforms to our physical life. It must be trained so that the organic and physical impulses are the results of the promptings of our spirits.

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*Paper read in Convention at New York, April 18th, 1905.

Classic dancing is a medium through which the qualifications so much sought after in the early past, may be acquired. These, however, can only be obtained by extended practice and conscientious study, without which the results will be transient.

In physical education, we are quite alive to the advantages of repetition and practice. We know, if the study of dancing be persevered in for a sufficient length of time to give the muscles the requisite promptitude and harmony of action, the power will be ever afterwards retained, although little called into use, whereas, if we stop short of this point, we may reiterate practice by fits and starts without any proportionate advancement.

There is no royal road to the acquirement of æsthetic movements, by which we may even approach perfection; there must be work, and a continuation of work; but when we consider the advantages to be gained, we should not hesitate.

It may be interesting at this juncture to give a brief description of the training of a ballet dancer, which will convey some idea of the work necessary to produce that marvelous strength, agility and quickness possessed by the professional dancer. Most of the ballet at the opera are of very humble origin, daughters of little shop-keepers, of green grocers, janitors, little tailors, little milliners, etc. A good many, too, are children of theatrical employees. In some families, dancing is the hereditary profession; thus the Vestris formed a whole dynasty; so, too, the Merantes, and the Stibbs. When it is decided that the little daughter shall become a dancer, she is brought to the professor of the opera, who examines and pronounces her to be fit or unfit for the profession. The verdict being favorable, the little one henceforward belongs to the opera. She is now aged seven or eight years, and if she works hard she will become a passable dancer in about ten or twelve years. The first stage is the little girls' class. Winter and summer, day after day, every morning at 10 o'clock, the little ones come, accompanied by their mothers, each one carrying a little bag, a regular Noah's ark, full of miscellaneous objects necessary for the studies or the happiness of a pupil of the petite class such as stockings, dancing shoes, a box of powder, comb, button hook, some bread, a bottle of wine and water, cold veal, eggs, sardines, apples and what not.

In a twinkling of an eye the little ones undress, put on their working costume and come rushing upstairs pell mell into the classroom, bounding round the professor and kissing her, and often this preliminary morning greeting becomes so boisterous that the professor has to appeal to the mothers who interfere majestically and efficaciously with a general distribution of slaps and boxes. At last order is established. The mothers take their seats on benches at one end of the room and begin knitting, dozing or reading. The room is large and bare, with bars fixed parallel to the walls on three sides and a sloping floor to accustom the pupil to the sloping stage of the theatre. Along the free wall are benches, and two chairs which accommodate the professor and her assistant who plays the fiddle.

The girls wear low-necked corsages, leaving their arms bare, white muslin skirts, broad sashes of blue or red ribbon, pink tights and gray canvas shoes. They are a lean, scraggy lot, not lovely to look upon individually, but full of good humor and vivacity, for all these little people are conscious of the glory of belonging to the opera, and they adore that grand abstraction which is at once an art, a career, and an institution, namely, the dance.

"All in places!" cried the professor, and the girls run to the bars and the fiddle gives the word of command. There is no melody, but simply a series of andante, allegro, pizzicato and trill movements, each followed by a tremolo, so that to the untutored ear the sounds suggest the confusion of the tuning of an orchestra. But the dancers understand that such and such notes indicate such and such a posture at the bar. The object of these general exercises is to dislocate the dancers.

At every moment during the lesson the professor intersperses her remarks with the command, "Smile! Smile!" for in the midst of the most difficult and torturing dislocations the ballet girl must smile, and the art of smiling has to be learned, like a step or a develop. After half an hour of these general exercises at the bar there comes a rest and the little girls begin once more to chatter and flutter, while the professor lays the dust by watering the floor in geometrical interlacements. Then follows the adage or second part of the lesson, which consists of an ensemble and composed steps. The dancers take places in the middle of the room in rows, the steps are indicated by the professor, and the little ones begin to bound, whirl, pirouette, form groups and smile in unison (always that smile), while the fiddle scrapes queer tunes. The professor is never satisfied; either the measure is not marked or the movements are jerky, or some other criticism; but meanwhile the little ones go on working and trying. The experience of almost all observers that have had the privilege of seeing the dancing class at work is the same. At first one feels inclined to laugh. Almost all these children are ugly or common looking, but the moment a group is formed for the ensemble, the moment the professor gives the word of command, all that is vulgar vanishes; the discipline of the movements communicates to the whole a certain air of nobleness and majesty; the result is something poetic, rhythmic, harmonious and unexpected. The feet touch the floor with one and the same sound, the blue and red ribbons of the sashes float in the same breath of air, the arms describe an identical curve and the legs swing and spring in unison. The ugly individuals are metamorphosed by a grace of movement. At intervals there are moments of rest, but the zealous pupils do not rest, they run to the bar and work their knees and loins, multiplying their efforts to gain that suppleness and lightness, which the public often seem to regard as natural and innate.

At the finish of the adage come variations and then another course of dislocation at the bar, then with their sweetest smiles they salute first to the right, then to the left, as if thanking an idolizing public for deserved ovation. In a second the classroom is empty. The little girls panting and worn out, don their paltry robes of poverty and return under their mothers' wings to their homes. Such is, in outline, a sketch of the daily work of the little class and of the apprentice dancer in the first stage of her career. The higher the dancer mounts, the greater are her labors and her fatigues.

Right here, in parenthesis, let me protest against the popular belief that dancers' feet are deformed or hardened by their profession, so as to be covered with corns and callosities. Dancing hardens the heel, the sole, and the great toe, but that is all. Taglion's feet were as white as milk, the nails of her toes were rose-colored. polished and transparent, and so beautiful that they have become legendary in the annals of the dance.

Dancing is the most severe and jealous of all the arts, and those who have been truly great dancers, have served a terrible and endless apprenticeship, and allowed themselves but few and brief excursions into the domains of frivolous pleasure.

Dancing is considered by many to be a mere mechanical moving of the feet to music. These ideas are false in the farthest degree. Dancing is the expression of inward emotion, and movements become meaningless, mechanical and gymnastic, when not inspired by the promptings of the inner self.

The general public is inclined to applaud mere difficulty, marvelous material execution, novelty and singularity of combinations, which have no relation to our passions or emotions.

The mastery of difficulty in the choregraphic art is simply a question of practice and patience, but these alone will not make the artist. The ideal is to seize and render in the liveliest and truest manner the mute expression of the soul.

All arts have two distinct parts — the expression of human passions and sentiments which constitute their foundation, and the peculiar mechanism or process of each, which gives the form, and of which the artist must be master. A dancer must know how to execute movements, steps, postures, etc. But if effort stops there, and if one does not seek to speak to the soul as well as to the eyes, he will remain a simple gymnast or acrobat.

The peculiarity of dancing is to evoke souls by means of bodies; to create the spiritual and the ideal by means of the material and the real. With these qualities, dancing, to be æsthetic must have finish in its execution, vivacity, rapidity, voluptuous grace, eloquence of corporal gesture, and attitudes that speak to the senses. In theory, we might perhaps lay down the axiom that dancers are emblems and not persons; they are poets, expressing themselves without the apparatus of the writer, without words, without rhyme, without conventional signs in black and white. Sentiment should never be outdone by virtuosity, the essential should never be eclipsed by the accessory; classic dancing should always be expressive, nicely cadenced, musical and plastically irreproachable; at any moment of the dance, and in each and all attitudes, a dancer should be a fit subject for statuary.

Rapidity of movement is not a characteristic element of dancing. It is not necessary to move rapidly, or even to move the feet at all. We can dance with the hands, arms, body, head, eyes, lips, in fact, with any part of us, either singly or in conjunction with other parts.

Our movements may be executed with any degree of quickness.

We may express the slow and graceful dignity of the Minuet, or the rapid spasmodic movements of the Tarantella.

We may express the soft breezes of summer, or the rustling of the autumn leaves, or the chilly winds of winter, or the glad tidings brought by the appearance of the first blade of grass in spring.

We may give expression to joy, to sorrow, to anger, to hatred, or to love; in fact, we may have the body, as a whole and its members severally, so in our power, that the moods of the soul may be easily and gracefully rendered.

Man is compounded of various bodily powers and mental faculties; and classic dancing is nothing more than the regular use of these powers, harmoniously adapted, and subordinate to time, music and measure, and consists chiefly, of position, attitude, gesture, grace, expression and contrast, all of which derive their principles from nature.

Position is the foundation or basis upon which the principles of the art of dancing are founded; for without good position, action, however animated, can never thoroughly please.

Attitude of the body consists in presenting one's self in the most graceful manner.

Of the other requisite qualities, expression may take the lead; for it is expression which conveys to our senses the passions and emotions of the mind, by visible action and gesticulation. The eyes, the mouth, the entire countenance and every corresponding power, must unite to constitute its force. Expression is the life and soul of action. It is a just representation of passion and of character; of passion, by exhibiting every emotion of the mind, as outwardly revealed by any peculiarity of gesture, or by the extension and contraction of the features; of character, by representing the different manners of men, as arising from their particular temperaments or professions.

Grace consists of fitness of parts and good attitude, and is akin to expression; both, being alike, subject to the dictates of the mind.

The most valuable attendant on grace is contrast, which, in its most pleasing form, is always accompanied by ease; and though it is the office of contrast to set one part of the body in opposition to the other, yet, like light and shade in painting, it adds force, also gives relief to each part.

Many of the qualities I have mentioned should not be confined to dancing alone; on the contrary, they are equally necessary in the senate, the pulpit, the bar, on the stage, and, I may add, in every circumstance of life wherein our emotions and affections are interested. One cannot present himself with good grace, but through their united influence.

The introduction of classic dancing into the gymnasium was prompted by a feeling that there was a space left vacant; a lack of finish to the ordinary gymnastic exercises; that there was needed a work which would add beauty to these movements and through its advantages, harmonize the motions of the body, so as to produce habits of graceful ease upon all occasions, thereby making better men and women of those who devoted themselves to physical training.

We believe it is our duty to make the most of ourselves. We believe it is our duty to make ourselves as pleasing in form and manner as possible. If the Almighty has not been kind to us in this respect, so much the more should we strive to improve upon his handiwork.

It is a duty which we owe ourselves, our friends, and all with whom we come in contact.

First impressions are the most lasting, and all should strive to make a pleasing impression upon those whom we chance to meet.

We little know what the turn of things may be, and should not allow our appearance to prevent opportunities being used to our advantage; and what is more important and suggests less of a selfish nature, is the part which we should play in making everybody's surroundings as pleasing as possible. The Greeks first made themselves into beautiful forms, before they expressed such objects in marble and painting. We all know how much pleasure has been given to the generations which have followed them, by their examples of culture and art. These examples have exerted an influence for good, and will continue to do so to the end of time.

We, in a small way, are able to cast an influence for good, and while making others better and happier, are conferring the same blessings upon ourselves.

The advantages arising from the cultivation of classic dancing, especially when those who apply themselves to it are young, are very evident. There are but few children so happily formed by nature, as not to require the assistance of art to rectify some few imperfections, which an impartial eye may discover; therefore, the sooner those blemishes are attended to the better; for, when the joints and muscles are flexible and yielding, all, natural as well as acquired defects, may be greatly overcome; but if once time has confirmed their positions, it will require great labor and trouble to give them a free and easy motion.

When young people first appear in public life, external qualifications are then, in particular, of great consequence, as such attributes seldom fail to gain the most favorable reception. A graceful carriage is agreeable to every one. It fits one for the best of company, and we dare say, there are many who can recall instances of men, who have made fortunes, without having had other attainments than a good address to recommend them. There is a certain propriety of conduct, behavior and address, which is necessary to be observed by men in every station and profession in life, and which is oft times of more real use to them than superior talents. These, as it were, stand forth to solicit the notice and favor of mankind, and seldom but with success.

There was once a man of great ability, who bewailed the want of this part of his education to the end of a very honorable life. He observed that there was no occasion for the common use of great talents; that they were but seldom in demand; and that these very great talents were often rendered useless to a man, for want of smaller attainments.

Every one is sensible that grace, in conferring a favor, effects more than the favor itself, and that a kind smile or an affectionate tone penetrates the heart more deeply than the most brilliant eloquence.

In the carriage of the body, both sexes should strive to acquire an easy natural manner, until it becomes habitual.

Classic dancing was first introduced into the gymnasium at the summer normal school of 1893 at Hemenway Gymnasium, Harvard University. Dudley Allen Sargent, director of physical training at that institution, was among the first to recognize in it an important branch of training for both men and women. The foundation of this co-ordinate work, from which an unlimited variety of the most valuable developing exercises is formed, consists of the long established five positions of the feet and five positions of the arms, together with the positions of the whole body, known as attitudes, arabasques, poses, elevations, groupings, etc. From these precepts are established, whereby the steps, attitudes and motions are systematically arranged, according to method, and in strict harmony with time and cadence of music. We say most valuable developing exercises. It may be interesting to mention a few statistics of development produced by æsthetic dancing, when conscientiously studied and practised. It raises and develops the chest, lengthens the waist, and also reduces its circumference; the hips are made smaller, the thighs and calves of the legs are enlarged, the ankles are reduced in size, while the insteps are raised and given a greater arch, and we wish to state that properly directed and intelligently applied dancing exercises are an absolute cure for flat foot. This may seem a broad statement, but we are made positive by our practical experience, and the beneficial results of our work in this direction can be vouched for by those high upon the ladder of authority in physical training.

The changes noted in thirteen young ladies during twenty-five days' study were as follows: Average increase in normal chest measure, from half an inch to an inch and one-half; with chest inflated, from half an inch to an inch and three-quarters; variations in measure at ninth rib (chest normal), from a reduction in two cases, to an increase of two inches and three-quarters; at ninth rib, with chest inflated, from a reduction in two cases to an increase of three inches. The waist in some cases was reduced one inch in size, while in others there was an increase, a result occasionally found in such tests. The largest increase in the calf of the leg was half an inch. The greatest reduction in girth of ankles was one-quarter of an inch. The instep in every case was raised. I have known an increase in normal chest measurement of one inch in ten days, from simply carrying the head back to its proper position and accompanying this exercise with suitable arm and body movements. A reduction of six and one-quarter inches in girth of hips has been the result of three months' practice.

To teach classic dancing successfully and to produce the best results requires a more thorough knowledge of the fundamental principles and technique than perhaps the average person is aware of. Then again, there is that subtle, magnetic influence, the property of every thoroughly qualified and successful teacher, which must not be lost sight of, and we are sure that all those who are conducting schools for normal training in any line would do well to give this valuable requisite more consideration. We find among teachers of dancing, as well as among teachers of physical training, altogether too few who are thorough and conscientious; we find too many who are satisfied with a smattering of this and of that; too many who are merely superficial, and it is those who are striving for quantity of work rather than quality. The moment a teacher becomes satisfied with his work he is of little value. The life of an instructor should be one of constant study to improve upon previous lessons, and to approach as near perfection as possible.

PHYSICAL QUALIFICATIONS OF WOMEN.*

G. L. MEYLAN, M.D.

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In the development of the physical training profession the evolution of men and women teachers has been radically different.

The majority of the men who entered the profession during the first period from 1870 to 1890 were well endowed physically. They had strong, well developed bodies and possessed a large amount of gymnastic and athletic skill, but were deficient in general education and technical training. With the advent of normal schools and higher standards in the profession, the conditions have changed. The mental qualifications of men teachers of physical training are now fairly high and the physical qualifications are generally lower than formerly.

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*Read in Section, Normal Schools, April 18, 1905.

The development of qualifications in women teachers has been in the opposite direction. The majority of the women who entered the profession before 1890 were school teachers well endowed mentally, but in most cases lacking in those physical qualifications now considered essential. Higher standards, better normal schools, and keener competition have resulted in raising the physical requirements while the educational requirements have not increased except as regards technical training. The early women teachers were much older when they entered the profession than the present graduates of the normal schools. This fact affords partial explanation for the difference in the mental and physical qualification of the two periods.

Age is perhaps the first physical qualification of the woman teacher of physical training. When admitted to the normal school, the candidate should be at least 18 years old, and not over 25, preferably about 20. Girls under 18 are not sufficiently developed to take up the arduous physical work of the normal school. After 25, it is too late to begin training the many physical qualities required of the physical training teacher. Structural and functional changes involved in the acquisition of good carriage, grace of movement, co-ordination, gymnastic and athletic skill, are accomplished slowly and imperfectly after that age.

Health is absolutely essential to success in teaching physical training. Girls who lack health and vigor should never be admitted to a normal school. The teacher of physical training is essentially a teacher of health. A weak and sickly girl is certainly not qualified to teach health to others. Any organic disease or weakness which is of a permanent character should be sufficient cause for the rejection of a candidate. Vigorous health is a necessity because the work of the physical training teacher is arduous. The frequent breaking down of teachers in our profession affords ample proof on this point.

Proportions.

Physical presence is a valuable possession in any occupation, but for the physical trainer it is almost a necessity. A girl of very short stature, or excessive weight, should not be admitted to a normal school. Any marked physical defect, such as excessive round shoulders, spinal curvature, or other deformity, should be sufficient cause for rejection. A girl under 5 feet, 2 inches is seriously handicapped in teaching gymnastics, while a stature of 5 feet 6 inches to 5 feet 8 inches is a distinct advantage. The question of weight and its distribution is also important. Most girls weighing over 150 lbs. when under the age of 25 are too heavy to attain a sufficient degree of proficiency in performing gymnastic movements. The absolute weight is perhaps less important than its distribution. It is well known that women with marked feminine characteristics, small shoulders and large hips, find it impossible to perform the ordinary exercises on the apparatus. In proportion as a woman approaches the masculine type of large shoulders and small hips, she can perform exercises on the apparatus more easily. This fact is to my mind an objection to women teaching gymnastics at all. Of course, we should not care to see our women teachers of physical training endeavor to become skilful gymnasts and approach the masculine type. It is not necessary that a girl be an expert gymnast to succeed in our profession, but she must be able to do the simple work on the apparatus in good form if she is to teach such work successfully. A teacher of physical training, who is not a better performer than her pupils, lacks an important element in securing their respect and confidence.

Another physical qualification of importance to the normal school candidate is a good voice. It is possible to improve the voice by proper training, but when very weak or too high pitched, it can never be changed into a strong and well modulated voice.

The essential physical qualifications for the candidate to our normal schools of physical training may be summed up as follows: Twenty years old; robust health; good physical presence; erect and graceful carriage; a stature of about five feet six inches; approximately a hundred and forty pounds; even distribution of weight; at least fair gymnastic and athletic ability; and a strong, agreeable voice.

In closing, I do not wish to give the impression that we should refuse candidates who fail to measure up to all these standards, for we know of individuals who succeed although they lack in one or more of these qualifications, but they are always handicapped and their success is due to exceptional advantage in some of these qualifications.

ATHLETICS.*

GEO. L. MEYLAN, M.D.

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The subject of athletics is assuming such importance in our colleges and schools that presidents, principals and school officials are beginning to discuss the question.

A large meeting of college presidents and professors from the middle West held recently in Chicago was given up to the consideration of athletics.

The Physical Education Societies are giving attention to the consideration of the Abuse of Athletics in Secondary Schools.

Numerous articles on athletics in the public press indicate a very wide interest in the subject.

School officials and parents are beginning to ask the question whether the benefits derived from participation in athletics justify the expenditure of time and money and the risk of injury involved.

I shall try this evening to review the athletic movement in American colleges and secondary schools, and point out the advantages and the evils of this movement.

There were practically no organized sports in American colleges before the Civil War. Harvard and Yale had five boat races before the war and there was a little interest in baseball, but the four major, and the numerous minor sports as we know them to-day have all been developed within forty years, and most of them within twenty-five years.

Rowing was the first sport to be definitely organized. The annual boat race between Harvard and Yale was started in 1864, and other colleges commenced rowing about the same time.

Baseball was regularly organized soon afterwards, but football and track athletics were not introduced as regular college sports until about 1880.

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*Read before Section of Secondary School Directors, April 18, 1905.

In the secondary schools these sports were introduced some years later and the interscholastic athletic leagues of to-day have all been organized within ten or fifteen years.

Another indication of the recent and rapid development of athletics in this country is the fact that fifteen years ago nearly all the British records were ahead of American records, but now nearly every world's record is credited to the United States.

In less than 25 years the practice of athletic sports in American schools and colleges has increased enormously. In 1878 not more than one-fourth of the students practised any regular sport, whereas now more than three-quarters of all the students practise one or more sports.

In this same period the occupation of athletic trainer has been developed. Twenty-five years ago there were not a half-dozen professional trainers and coaches employed, but there are now thousands of men employed in these capacities. Not only every college, but especially every high school, employs one or more professional coaches for its athletic teams.

We may now proceed to a consideration of the advantages of this great athletic movement. The first benefit derived from athletic sports is health and vitality to the participants. This is a real benefit, for nothing can take the place of athletic sports to develop strong, vigorous bodies in boys and young men. Formal gymnastics have their corrective and educational value, but they can never take the place of out-door sports to develop organic vigor. There are many proofs that the physique of American college men has improved greatly in the last 25 years. The scientific observations made by Dr. Sargent of Harvard, Dr. Seaver of Yale and Dr. Hitchcock of Amherst show this conclusively. A second distinct advantage of athletic sports is the moral training they afford. There is nothing like football to develop physical and moral courage. It takes physical courage to tackle a young giant running at full speed; it takes moral courage to refrain from holding, striking or doing other things against the rules when the umpire cannot see you.

Then self-reliance is another moral quality resulting from the practice of athletics. When a runner has to run the race that may decide the victory for his college, or a half-back has to make the effort which may result in the winning touch-down for his eleven, he learns to rely upon himself.

Judgment is developed by the football player and the baseball player in choosing the best play at all times under varying conditions. The runner who has what is called "good generalship" has developed good judgment.

Self-control is a valuable quality which is best acquired in a football game when one's opponent is constantly holding and striking, and you try to control your temper and not retaliate.

Decision is another important moral quality that is thoroughly well trained in the practice of athletic sports. Baseball and football furnish the best opportunities for developing this quality.

A third definite good result from athletics is the ethical training afforded.

Teachers agree that consideration for the rights of others is a quality much needed by most children. This quality is nowhere better developed than in athletic games, for the fundamental principle of all these games depends on the respect of the rights of others.

All team games also serve to develop a spirit of co-operation which is valuable training for modern life where so much depends upon co-operation of interests.

Among other ethical results of athletic sports may be mentioned the spirit of loyalty which is usually developed to a high degree as loyalty to the team and loyalty to the school or college.

There is still another advantage in athletics, that is recreation. We all realize the need for play and relaxation from work, and particularly mental work. Athletics are to young men what play is to children.

Groos tells us, that a function of play is to afford an outlet for exuberance of animal spirits in the young. We have strong testimony from many college presidents and school masters whose experience runs back over thirty years that there is much less vice and debauchery among students since the advent of athletics, because the practice of sports affords a natural outlet for superfluous animal spirits.

There are then many advantages derived from athletics, but unfortunately the very success of this movement has been so great that evils have followed in its train.

We hear far more about the evils of athletics than of the benefits. What are some of the most important evils connected with this movement?

These may be classified under two general headings: Direct evils resulting from an inordinate desire to win at any cost, and indirect evils resulting from commercialism and newspaper notoriety.

The direct evils resulting from the inordinate desire to win are many.

The first is the hiring of coaches and trainers, who are paid exorbitant salaries, the amount depending upon their ability to turn out winning teams. You have probably all heard of the $5000 salary paid to a college football coach for ten weeks' services. There are several colleges that pay $3000 to their football coach for ten weeks. But you may be surprised when I tell you that a secondary school within 40 miles of Boston paid $50 a day to its football coach last autumn.

There are good coaches and bad coaches, but the professional coach knows that if he turn out a winning team he can dictate his own terms as to salary for the next season; whereas, if his team is defeated, he will probably have to look for another position at a smaller salary. Under such conditions, it is not surprising that so many coaches resort to all sorts of tricks and deceit to gain victory. It is generally understood among college football players that professional coaches teach their men how to hold and how to break other rules without being caught by the umpire. I know of a college athletic trainer who teaches runners how to steal distance on the mark just before the start.

Another serious evil is the willingness on the part of coaches and captains to use athletes who are unfit to compete and run the risk of injuring them permanently.

One of the most serious evils in college and school athletics to-day is the practice of offering inducements to promising athletes to enter some particular school or college. There are colleges that make a practice of looking up all the promising athletes in the secondary schools and offering them inducements to enter their particular college. These inducements range all the way from free tuition to all expenses, including tuition, board, room, laundry and pocket money. Most of these items are covered by a certain amount of money paid for supposed services rendered in sweeping a floor in some fraternity house or some simple clerical work usually paid at the rate of about $5.00 per hour.

This practice tends to destroy the self-respect of all parties concerned and is perhaps the greatest single evil connected with athletics to-day. There are many instances on record where teachers and even principals of schools have offered inducements to star athletes to immigrate from one school to another.

Another direct evil of athletics is the use made of athletic victories by school and college officials as an advertisement for the school. I know of a secondary school where an attempt was made to maintain a football team in the autumn, a hockey team in winter, and a baseball, track team and crew in the spring, although there were only about thirty boys in the school.

The result was that some of the boys were completely exhausted from the continuous training.

I know of another small school that had its football team, composed of young growing boys, play three match games a week, although no college coach or captain would think of playing more than two games a week with a college team.

All these direct evils are accompanied by as many indirect evils that may be classed under the head of commercialism in athletics.

The first of these evils results from the tremendous crowds that flock to the football and baseball matches between the large college teams. The railroads do all they can to increase the excitement of these big contests because of the large business they bring. The street railways have a large pecuniary interest in the big games. The hotels, newspapers and a host of other industries have a financial interest in these big matches and do all they can to foster them. The reason why such great crowds attend the big football games is not their interest in the players or in the game, for the great majority of those who attend do not know a single participant personally; and furthermore, three-quarters of the spectators do not even understand the game. The only reason assignable for such big crowds is the expectancy for some exciting incident that will be exploited in huge headlines in the newspapers the next day and will be the main subject of conversation for some days afterward. People go because they desire to be able to say, "I was there; I saw it."

Another indirect evil of competitive athletics is the extravagance resulting from large sums of money being intrusted to very young men who are inexperienced in financial matters and form habits of extravagance in spending money that are injurious to themselves and have a baneful influence on the student body.

The excessive newspaper notoriety given to the participants in athletic contests is also a serious evil. Few young men can stand the publicity, flattery and popularity that come to the successful athlete without danger of disturbing their equilibrium and causing much disappointment when the sudden subsequent oblivion of the ex-athlete comes to them. The rapidity and loftiness of the successful athlete's rise to fame is only exceeded by the suddenness and completeness of the way he is forgotten immediately after he graduates.

Still another serious evil indirectly connected with athletics is the too prevalent practice of gambling, so evident at all athletic contests. Much of the interest manifested in the games is fostered by those who see in a big game nothing more than an opportunity to gamble on the result.

Having considered a long list of advantages and evils resulting from the present extensive athletic movement, it remains for me to suggest some possible remedies to cure the evils and use this tremendous force of athletic competition for the good of our young men and youths.

I shall suggest five measures which, if adopted uniformly, would probably minimize, if not completely remove the present evils.

The first of these remedies is the extension of a thorough physical examination of all students who participate in athletic contests. This measure was introduced in a few of the large colleges some years ago and has done much to prevent unsound individuals from injuring themselves by competing in athletic contests. Nearly all colleges now have their athletes examined before they are allowed to compete, but unfortunately this precaution is neglected in the secondary schools where it is most necessary; for boys between the ages of 14 and 18 are in greater danger of injury from overdoing than young men of college age. In this connection, I believe that some of the college sports should be modified for secondary schools. A beginning has been made in this direction by the Western Massachusetts Interscholastic Athletic League by dropping out all the distance runs from their athletic programs. I believe that a reduction of the time for football games from 35 to 20 minute halves, and the time for basket ball games from 20 to 15 minute halves is a very desirable change for school boys.

A second measure that should be taken is to organize a propaganda in favor of clean sport. That is, we should teach our boys and young men to maintain gentlemanly manners and a spirit of fairness on the athletic field instead of the present spirit of win at any cost.

A third very important measure is the so-called one-year rule which has been adopted by a few of the large colleges. This rule tends to prevent the custom of offering inducements to athletes to leave their school or college to go to another for the purpose of athletic competition. By this rule any student who changes from one college to another, is not allowed to represent that college until after he has been there one year. This rule should be adopted by all colleges and secondary schools.

A fourth measure that is sorely needed is to curtail and minimize the spirit of commercialism that has entered into our athletics. Unless the present tendency to make athletic contests great financial enterprises is checked, I believe that the time will come in the near future when the whole organization will break down.

There are signs already that serious young men who wish to get the most out of their college course, are unwilling to make the necessary sacrifice of time to play on the big teams.

Finally, there is another very important measure that should be taken. Every college and secondary school should have a director of athletics who is qualified by training and experience to direct the students in all the phases of this great problem, to organize and unify all the athletic interests for the good of the students. Such a man should be engaged and paid by the school. He should have authority to enforce rules, and above all, his compensation and the permanency of his position should not depend on the victories of his teams.

RHYTHM AND EDUCATION.*

LUTHER HALSEY GULICK, M.D.

New York.

Some years ago it was my good fortune to be able to take a trip through the black belt of Alabama, observing the revival phenomena as shown in a series of meetings of colored churches. Owing to the great kindness of a prominent church official, I was enabled to come into confidential relation with many pastors, to meet and to make medical examination of some who had been most affected during the revivals. Some of these I examined immediately after what is called, "The Visitation of the Holy Spirit." By means of a simple system of musical shorthand, I was able to record the rhythms which were used by the preachers, and to compare their effectiveness. Sitting in the back of the audience, usually in the gallery, my presence being wholly unknown to the audience, it was possible for me to observe with unusual fullness. I saw the quiet audience under the stimulus of the constantly reiterated rhythms of the speaker's voice, now in speech, now in song, frequently accompanied by effective gesticulations, gradually beginning to nod, or to gently tap the feet on the floor. This was followed by slight swayings of the body, occurring so regularly as to give an impression not unlike that given by a field of wheat over which a gentle breeze is playing. The gentle hum of accented voices, combined with the rhythms presented to both eye and ear, had evidently a constantly accentuated effect. The bodily movements became larger and more emphatic, the voices stronger, and the rhythm more positive. Occasionally individuals would rise from their seats, and with perfect rhythm of step, accompanied by lateral swinging of the body and singing, would walk up and down the aisles. The general position of all those who sat was one of most intense and absorbed attention, bodies inclined forward, with heads erect. Presently moans would be heard, and a manifest thrill would go through the audience. Usually a young woman, or occasionally a man, with a wild shriek would spring into the air from her seat. The control of these persons was so far gone that even bodily balance was lost. They would make tremendous jumping movements, involving both body, legs and arms, accompanied by shrieks and cries of the most extraordinary intensity and high of pitch. I saw one woman, weighing, I should say, two hundred pounds, jump straight into the air and then fall back into the pew behind the one in which she sat. The combined strength of four men was insufficient to prevent her from making the tremendous movements of the body just referred to. This was followed by all the phenomena of exhaustion — relaxed muscles, shallow breathing, and dilated pupils.

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*Presidential Address delivered before the American Physical Education Association Convention, New York, April 17, 1905.

This set of experiences, which I cannot now give more in detail, must serve as an illustration of the place which rhythmical movements have had in arousing and expressing emotions of many kinds among practically all the peoples of the world. The war dances of the Indians, the occupation dances of very many savage peoples, and the love dances, especially of the Orient, all tell a story of arousing and of expressing various emotions by means of rhythmical bodily movements.

The effects of constant rhythmical dropping of water upon the skin are well known — the parts swell, pain becomes keen and ultimately unbearable. To what extent this phenomena is due to the rhythm, we do not fully know.

These revival phenomena, as well as the emotional dances, appear, however, to be accounted for largely in this way: they are characterized by increased intensity of attention; by reality of the emotions felt; and often also by their stirring the individual to some course of action. These states and emotions tend to produce and express well-nigh complete immersion of the individual in the particular state of mind suggested.

I find it exceedingly difficult to formulate the underlying law. The following is offered with much hesitation as at least partial: *When rhythmical muscular movements are expressive of emotional states, they tend to intensify the attention.* This may continue so as to become pathological in its effects. In view of the well known facts as to the liberation of attention when exercises are carried on rhythmically, ultimately becoming automatic, the following is offered: *When rhythmical muscular movements have no emotional associations, they require constantly less and less attention.* These statements by no means state the whole law.

They are offered as partial and new answers to a very old and difficult question.

Let us turn now from rhythm of muscular movement to the periodicities, or rhythms, which are to be observed in children's activities. In a lesser degree, but over a larger area, are the periodicities of children's activities. The small child will play interestedly but a few moments with a single thing, but it is not long before he is ready for the same play again, and each day sees his complete curriculum of play rehearsed a number of times. His periods of interest and periods of absorbed attention are very short, but recurrence to them is equally quick. These periods of interest in identical subjects steadily lengthen during the passing years, till the well known phenomena of the seasonal rotation of children's plays occur. No normal child, during later childhood, carries on all his plays every day. In general he carries one major with one or more minor plays. Now it is tops, or marbles, or ball that occupy the chief place in his voluntary activities. They rarely, if ever, are coincident or balanced. The effects that are secured through these plays upon the individual are not gradual steps, including the development of the whole self. They consist of a series of unbalanced developments, but which altogether produce balanced growth. Tremendous attention is given by the child, during these periods, to each one consecutively. The child is often dominated, both night and day, by the particular activity which he has as his major. The tasks of school, and the duties of home are but necessary evils, containing no essential truth in them, to be gotten through with as quickly and as easily as possible in order that the child may get to what is to him the reality of life — the play which is engrossing him.

Children under these conditions give a kind of intense attention which is rarely, if ever, given to the tasks of school or the duties of home. It is not merely the play which secures this attention, because play that is carried forward steadily day after day, and month after month, becomes drudgery, not to be distinguished from the worst of daily work. The alternating periodicities of these states of attention is certainly one of the great factors which distinguishes play from drudgery.

Most of the world's creative work is done in this way. Most geniuses work as children play. Effects depending upon mere accumulation of course are not subject to this law. Work depending on insight and inspiration is. All work depending upon intensity of effort is subject to this periodic law. Capacity for intense effort is periodic; the attempt to coerce this and have it constant results only in a mediocre plateau of effort. There is something else in the attainment of great skill in any line than mere quantity of practice; places occur where rest and then most intense effort is demanded to effect the new co-ordination, accuracy or speed demanded. The capacity for this is also periodic.

This law of rhythmical periods is written deep in the organism — even height and weight do not develop by steady and even steps so much as by alternating pulses of relatively rapid and slow steps. This law may be partly stated as follows: *Maximum creative effects are only to be secured by complete immersion or saturation in the subject for limited periods. The duration of interest is in general a measure of the length of the pulse of power.* Long continued consecutive work beyond interest drains capacity for both inspiration and concentration. It pulls genius down to mediocrity, and mediocrity to the low level of dullness seen in average daily life. Constant discharge of power from a cell makes weak discharge and early exhaustion. Rhythmical discharge at the points of highest power means maximum effects and longest effectiveness. These pulses of power may well be regarded as the sum of the successive emphasis upon anabolism and katabolism of the body cells. These pulses follow each other rhythmically, so that we may see them die away with complete confidence that they will come again.

These two groups of facts constitute, what seem to me, two great but as yet comparatively little utilized sources of material in education. They are:

1. The relation between certain muscular rhythmical movements when done in company, and corresponding emotional states. And

2. The relation between periodic interests and power.

Of the very many pedagogical applications, which may be made of these laws with reference to rhythm, I shall refer to but two, namely: The importance of alternating emphasis in work, and the use of rhythm in the treatment of the feebleminded.

Men's activities go on chiefly when they have impulses to do something, or to express something. In so far as it is possible, education may well take advantage of this fact. It is not the purpose of this discussion to consider the relative emphasis which should be laid upon objective achievement and subjective attainment in physical education. It is, however, necessary to call attention to the fact that civilization has taken away most of the work which children have done during the past generation, co-operating with their parents. We have also lessened materially their available time and space for play; hence it is peculiarly important that we develop what remains to a wholesome extent, that is, the expressive side of life. If we take away what children can do, we must be particularly careful to give them other opportunities by which they may express themselves. One of the ways in which physical training may co-operate in this general movement toward self-expression, and at the same time advance the direct interests in the physical training itself, is by intimate co-operation with school celebrations. There should be frequent festal days, preceding which the children might well be trained in expressive marches and dances corresponding to the character of the occasion. This gives ample opportunity and obvious necessity for that alternating character in our gymnastics which we observe in the seasonal rotation of children's plays and of athletics of the adolescents. For this important suggestion I am indebted to Prof. Charles H. Farnsworth. These festal days give opportunity to have the physical exercises represent emotion that is more or less real, that is, instead of having the march merely so much physiological effect and so much æsthetic effect, it may have in addition the real relation of the significance of the day; so that there is a reason for an objective character of the muscular movements, as well as the subjective emotions which are to be expressed thereby. By this means also that variety, which is such a great source of interest, may be steadily secured.

No point is more important in the treatment of feeble-minded than the arousing and maintaining of interest and attention. These children lack greatly in the main capacity for sustained attention, in fact, the hopefulness of their cases may be pretty largely determined by the capacity to give attention. Rhythmical movements, in the form of marching, simple dancing, rhythmical work with the body and hands, I have discovered to be a powerful agency for arousing interest and maintaining attention. When we consider the place of rhythm among savage and undeveloped people, it seems reasonable that it should be similarly so among the feeble-minded.

Our physical training, while not neglecting those corrective effects which are necessary in order to combat the effects of sedentary life, must become more joyful and happy, must more fully express individual feeling, and must be related more closely to the other educational, and particularly to the social, life of the individual. It is my belief that these steps will be distinctly furthered by larger use of rhythmical work in our physical training.

We can select those rhythmical movements, which are in correspondence with the physiological ends of physical training, and which at the same time express the simple æsthetic pleasure which modern life seems to render increasingly rare. The æsthetic and social ends of physical training must be no less real to us than the physiological ones.

REPORTS OF THE COUNCIL.

MEETINGS OF NATIONAL COUNCIL, EXECUTIVE COMMITTEE AND NATIONAL CONVENTION.

April 5, 1905.

Present: Drs. Gulick, Savage and Meylan, Mr. Hillyer and Mr. Haug.

The minutes of the last meeting were read and approved.

A letter of invitation from the North American Gymnastic Association was referred to the Convention.

A letter from Miss Meta Rieker, Secretary of the Cincinnati Society, stating that the Cincinnati Society was about to dissolve, was referred to Mr. Haug who offered to endeavor to persuade the members in Cincinnati to continue the society.

Applications for affiliation with the National Association from the Pacific Northwest Society and the Rhode Island Society were read. It was voted to refer the matter of affiliation of these new societies to the Council by mail vote.

The Secretary presented the financial report for the month of March. The Report was accepted.

Financial Report, Secretary's office for March.

Received.		*Paid.*	
Cash balance, Feb. 28	$91 78	Subs. to R. I. Normal Sch., entered twice	$1 50
Dues	473 00	Exchange on checks	1 20
Subscriptions	14 75	Refunded to Fritz Krimmel for 3 Rev. retur.	75
Back Nos.	4 20	Express on Rev. from Editor	60
		Postage	20 94
		Rebates to local Soc.	135 00
		Credited to Pub. Fund	180 45
		Sec. office clerical help acc't	33 33
		Cash on hand Mar. 31	209 96
	$583 73		$583 73

The following persons were elected to membership in the Association:

Gertrude Marguerite Lifler, 310 West 58 St., New York City.
Miss Ethel Deive, Fort Plain, New York.
Miss Elsie A. Williams, 129 W. 103 St., New York City.
Mrs. Caroline R. McC. Weston, 60 Manhattan Ave., New York City.
Miss Marion Shepard, 835 Madison Ave., New York City.
Mrs. Agnes Russell Miles, 204 W. 94th St., New York City.
Miss Matilda Krementz, 1125 Broad St., Newark, N. J.
Mr. James L. Walsh, 56 Bakersfield St., Boston, Mass.
Miss Isabell H. Dealy, 52 Melbourne St., Portland, Me.
Mr. Samuel C. Withers, Moses Brown School, Providence, R. I.
Mr. Walter Scott Cowing, 5533 Morris St., Germantown, Philadelphia, Pa.
Mr. Robert A. Grant, 212 S. Second St., Rockford, Ill.
Mr. Howard M. Strickler, 208 Mason St., Y. M. C. A. Bldg., San Francisco, Cal.
Miss Frances Baynes Walker, Wyncote, Montgomery Co., Pa.
Miss Claire Wiley, 39 Dartmouth St., Rochester, N. Y.
Miss Margaret McCarthy, 146 Thorndike St., Brookline, Mass.
Miss Laura Post, 16 Newbury St., Boston, Mass.
Miss Elizabeth A. Larrone, 40 Vinal Ave., Somerville, Mass.
Miss Helen L. Lewis, Glenbrook, Conn.
Miss Eva May Gorsline, 32 Greenwich Park, Boston, Mass.
Miss Agnes S. Thompson, Norfolk, Mass.
Miss Helen E. Case, 46 Lake Place, New Haven, Conn.
Miss Grace Tomagno, 3 West 87th St., New York City.
Miss Christine Stephens, 15 Everett St., Cambridge, Mass.
Miss Susan Douglas Merritt, 6 Everett St., Cambridge, Mass.
Miss Maude M. Dudley, 7 Wendell St., Cambridge, Mass.
Miss Ida Louise Brooks, 6 Everett St., Cambridge, Mass.
Miss Alice G. Locke, Belmont, Mass.
Mr. Louis P. Freytag, 832 Forest Home Ave., Milwaukee, Wis.
N. J. MacArthur, Menmonie, Wis.
Mr. Harvey C. Went, 29 Park St., Bridgeport, Conn.
Mr. E. Stagg Whitin, 94 Lawrence St., New York City.
Dr. William Gray Schauffler, 400 Madison Ave., Lakewood, N. J.
Mr. George W. Wallace, 54 West 120th St., New York City.
Miss Stella Basch, 53 Stratford Place, Newark, N. J.
Mr. John H. Greenwood, Training School, Springfield, Mass.
R. D. Purinton, Training School, Springfield, Mass.
Miss Wilhelmina G. Wright, 204 Forest St., Medford, Mass.

Miss Christina C. Anderson, 117 Falmouth St., Boston, Mass.
Miss Florence C. Bacon, 15 Arundel Terrace, Newton, Mass.
Miss Mildred Silsbee, 104 School St., Somerville, Mass.
Miss Elizabeth Bass, Wilton, Me.
Miss Celia Mason Choate, Box 16, Essex, Mass.
Miss Clara Morse Eisenbrey, 97 Huntington Ave., Boston, Mass.
Leslie Rand, 1073 Centre St., Newton Centre, Mass.
Ruth E. Potwine, 102 Davenport Ave., New Haven, Conn.
Minnie Esther Pike, 102 Davenport Ave., New Haven, Conn.
Florence May Penney, 102 Davenport Ave., New Haven, Conn.
Elsie Marie Dayton, 46 York Square, New Haven, Conn.
Matilda Eleanor Miles, 102 Davenport Ave., New Haven, Conn.
Frances Mary Thompson, 102 Davenport Ave., New Haven, Conn.
Edith Scot Paschall, Westchester, Pa.
Miss Gertrude Bradley, 150 Grand Ave., New Haven, Conn.
Mary Peyton Green, 106 Whalley Ave., New Haven, Conn.
Mary A. Smith, 102 Davenport Ave., New Haven, Conn.
Miss Mary Benton, 370 Centre St., Orange, N. J.
Leona Hertha Fette, Talcott Hall, Oberlin, Ohio.
Kate A. Cramond, Talcott Hall, Oberlin, Ohio.
Esther Hall Auten, Talcott Hall, Oberlin, Ohio.
Frances Graydon Knox, 130 W. College St., Oberlin, Ohio.
Anna Woodbury McDaniels, 130 W. College St., Oberlin, Ohio.
Edith Wynona Storey, 176 W. College St., Oberlin, Ohio.
Miss Gertrude Willson, 132 High St., Orange, N. J.
Robert Nohr, 510 Lasselle St., Ft. Wayne, Ind.
Mary Porter Beegle, 1230 Amsterdam Ave., New York, N. Y.
Helen Newpher, 457 West 123rd St., New York, N. Y.
James J. Jardine, 276 W. 128th St., New York, N. Y.
Shirley Barnes, 420 West 118th St., New York, N. Y.
George R. West, Lawrenceville, N. J.
Geo. W. Hammond, 453 West 57th St., New York, N. Y.
Florence P. Salisbury, Rhode Island Normal School, Providence, R. I.

BUSINESS MEETING OF THE CONVENTION, *April* 18.

Dr. Luther H. Gulick, President, in the chair.

Dr. George L. Meylan, Secretary, presented the following report.

SECRETARY'S REPORT.

The last convention held at Detroit, in April, 1903, marked an epoch in the history of the Association. A new constitution much simpler and shorter than the old one was adopted. The name of the Association was changed from Association for the Advancement of Physical Education to American Physical Education Association. The form of organization of the Council was changed from a local committee of ten members to a representative body made up of the former president, the editor of the REVIEW, three members at large, a representative from each national section and each local society, and enough additional members to make an executive committee of five in the locality where the Council is located. The new arrangement is very satisfactory as it gives better representation of the various interests of the Association in the National Council.

The new council was organized during the summer of 1903. It consisted of 16 members distributed as follows: The ex-president, three members at large, two representatives from national section, seven representatives from local societies, and three additional members on the Executive Committee in New York. The personnel of the Council has changed considerably during the last two years by the addition of representatives from new local societies and a new national section, and by the election of members to replace others who resigned. The present council is made up of 22 members as follows:

DR. LUTHER HALSEY GULICK, *President.*
DR. DUDLEY A. SARGENT, *First Vice-President.*
MR. LORY PRENTISS, *Second Vice-President.*
DR. GEORGE W. FITZ, *Editor.*
MR. EMANUEL HAUG, *Treasurer.*
DR. GEORGE L. MEYLAN, *Secretary.*

Mr. Henry S. Anderson, Dr. E. H. Arnold, Dr. James A. Babbitt, Dr. Helen E. Brooks, Mr. Albert Cross, Mr. William Edmund Day, Dr. J. C. Elsom, Dr. Delphine Hanna, Mr. C. W. Hetherington, Mr. J. Blake Hillyer, Dr. J. H. McCurdy, Dr. Mary Rees Mulliner, Dr. J. E. Raycroft, Dr. W. L. Savage, Miss J. Wold, Dr. T. D. Wood.

At the first meeting of the National Council, held October 26th, 1903, it was voted to hold the regular meetings of the Council on the first Saturday of October, February and June, and the meetings of the Executive Committee on the first Monday of November, December, January, March, April and May. Every stated meeting of the Council and of the Executive Committee has been held, and no meeting has failed of a quorum.

The minutes of all meetings of the Council and Executive Committee have been typewritten in full and a copy sent to every member of the Council. All important matters have been acted upon by the entire Council through mail votes.

The officers were elected by mail vote. Dr. Luther Halsey Gulick was elected President and Editor; Mr. Jakob Bolin, Treasurer; and Dr. T. D. Wood, Secretary. Dr. Wood declined the secretaryship on account of ill health and Dr. George L. Meylan was elected to the office. At the first meeting of the Council, the constitution was interpreted as providing that the editor of the REVIEW could not hold two offices in the Council. It was therefore voted to call for another mail vote for the purpose of electing an editor. Dr. Geo. W. Fitz was elected to the office.

A plan was devised to set aside a part of the income of the Association, to be known as the Publication Fund, for the expenses connected with the publication of the REVIEW.

This publication fund consists of (a) fifty per cent. of the receipts from dues; (b) all the receipts from subscriptions to the REVIEW; (c) the receipts from the sale of REVIEWS and reprints; and (d) the receipts from advertisements in the REVIEW. The estimated income from these sources and the budget for the expenses of the REVIEW for the year 1904 are shown in the following table:

Income.

Fifty per cent of membership dues..........	$600 00
Subscriptions	115 00
Advertisements	185 00
Sale of reprints, etc......................	100 00
	$1000 00

Expenditures.

Printing and mailing	$600 00
Editor's salary	300 00
Clerical work, proof reading and expenses....	100 00
	$1000 00

The following table shows that this plan was entirely successful during the year 1904.

Review in account with G. W. Fitz, editor.

Received.

Received from Dr. Meylan	$882 79
Advertisements	331 80
Interests on deposits	5 10
Subscriptions	26 70
Dues	4 00
Advertising bills receivable	16 60
Total	$1266 99
Less exchange on checks	1 10
Net receipts	$1265 89

Paid.

Editor's office account—	
Salary	$300 00
Clerical help	100 00
Postage, etc.	26 72
Copyright	4 00
Review—	
Printing, etc., 4 Nos. each 1,400 copies	601 80
Reprints—	
300 Beginnings of Modern Physical Training in Europe	10 80
200 Harvard Oarsman	11 25
Dues transferred to N. Y.	4 00
Index 1904, Vol. IX	7 00
Envelopes for Review	15 00
Surplus turned to general fund of Assoc.	185 32
Total	$1,265 89

The same management will be continued for printing the Review during the current year.

The membership of the Association is in a very encouraging condition. The change in dues from one to two dollars made in 1903 was, on the whole, a wise step; it increased the income of the Association and made it possible to place the Review on a sound financial basis. There is no doubt, however, that a considerable number of members allowed their membership to lapse and had to be dropped for non-payment of dues on account of the increase in fees. This fact is made clear in the following table:

Number of members dropped for non-payment of dues.

1902	1903	1904	1905
33	32	96	62

The effect of the change is over now, and we have reason to expect a healthy and permanent increase in the membership. The following table shows the status of the membership on April 15th, 1905:

Paid-up members (paid for 1905)	692
Members in arrears for 1905 dues	205
Members in arrears for 1904 and 1905 dues	137
Total membership	1034

This is the largest membership in the history of the Association.

Five hundred and sixty-four members are affiliated with local societies and 470 belong only to the national Association.

Circular letters and application blanks were sent to over 200 physical directors in the Young Men's Christian Association. Sample copies of the REVIEW were sent to about 200 teachers of physical training in England. Special efforts were made to secure members among the students of the normal schools and the summer schools of physical training. A few members of the Association have been very active in inducing teachers of physical training to join the Association. The membership should be much larger; there are probably 800 to 1000 teachers of physical training in the United States and Canada who are not members of the Association. If every member would make an effort to secure at least one new member this year, the strength of the Association and the value of the REVIEW would be greatly increased.

The new constitution and the change in the dues have stimulated the local societies to greater activity. New societies have been organized in Springfield, Massachusetts; Oberlin, Ohio; Pacific Northwest, and Rhode Island. Of the other nine local societies, all are strong and active, except the Cincinnati society.

The membership of the local societies is shown in the following table:

	Members of A. P. E. A.	*Local members.*	*Total.*
New York	225	5	230
Boston	107	18	125
Philadelphia	71	0	71
Springfield	42	0	42
New Haven	32	0	32
Wisconsin	16	0	16
Cleveland	14	108	122
Rhode Island	14	0	14
South Michigan	14	0	14
Oberlin	10	0	10
Pacific Northwest	10	0	10
St. Louis	9	0	9

There are now three national sections affiliated with the Association: The Society of College Gymnasium Directors, the Society of Secondary School Directors, and the Public Schools Physical Education Society. The latter was organized at the St. Louis Exposition and affiliated with the Association in October, 1904.

The financial condition of the Association is now on a permanent basis. The income is just enough to carry on the business of the Association and the expenses connected with the REVIEW. The financial report of the secretary's office since the Detroit Convention follows:

Financial Report of the Secretary's Office from January 1, 1903, to April 15, 1905.

From January 1, 1903, to November 12, 1903—(Miss Bancroft)

Receipts.

For dues	$1,435 50	
Subscriptions	106 38	
Back numbers and reprints	99 16	
Initiation fee	1 00	
		$1642 04
On hand January 1		143 07
From November 12, 1902, to December 31, 1903—(Dr. Meylan)		
For dues	$107 00	
Subscriptions	30 50	
Back numbers and reprints	5 95	143 45
		$1,928 56

Expenditures.

From January 1, 1903, to November 12, 1903—(Miss Bancroft)

To Treasurer	$844 53	
Rebate to societies	385 00	
Clerical help	400 78	
Postage	74 45	
Telephone, telegrams, messengers	5 06	
Exchange on checks	1 20	
Express	1 45	
Stationery	1 04	
Secretary's expenses to Detroit Convention	61 75	
Minor expenses	16 36	
Copyright of REVIEW	1 06	
		$1792 68

From November 12 to December 31—(Dr. Meylan)

Moving of Association property to N. Y.	$13 55	
Car fare	20	
Office furniture and stationery	9 25	
Rebate to member on REVIEW	35	
Postage	10 83	
Exchange on check	10	
Clerical help	49 33	
Balance on hand December 31, 1903	52 27	135 88
		$1,928 56

Financial Report of Secretary's Office for the year 1904.

Received.

Cash balance on hand Jan. 1, 1904	$52 27	
Membership dues	1648 10	
Subscriptions to REVIEW	111 55	
Back numbers and reprints	132 32	
Normal School of Gymnastics for Publication Fund	100 00	
Deficit Dec. 31, 1904	256 52	
		$2300 76

Paid.

Office furniture	$2 61	
Credited to Dr. Fitz, Mr. Bolin, and Dr. Crampton for money paid to them	13 60	
Express charges	7 05	
Exchange on checks	3 50	
To Dr. Fitz for expenses to N. Y.	17 00	
Refunded for dues, etc., paid twice	12 00	
Stationery	5 48	
For packing archives	1 00	
Postage	121 35	
Rebates to local societies	427 00	
Credited to Publication Fund	876 79	
Secretary's office clerical help acc't	399 96	
Secretary's salary for year 1904	1 00	
Paid to Mr. Bolin, Treasurer	412 42	
		$2300 76

From January 1 to April 15, 1905—

Receipts.

For dues	$1425 00	
Subscriptions	80 95	
Back numbers and reprints	21 38	
Surplus from Publication Fund in 1904	185 32	
		$1712 65

Expenditures.

From January 1 to April 15, 1905—

To Treasurer	$50 00	
Rebates to local societies	409 00	
Credited to Publication Fund	594 83	
Clerical help	116 66	
Exchange on checks	3 20	
Express charges	3 70	
Postage	52 31	
Stationery	1 94	
Refunded for three REVIEWS	75	
Messenger	50	
Subscription entered twice	1 50	
Deficit to balance 1904 account	256 52	
Balance on hand April 15, 1905	221 74	
		$1712 65

In conclusion the Secretary would suggest that the business of the Association handled through the Secretary's office is now so large that an effort should be made to secure a permanent secretary. One may get an idea of the amount of work in the Secretary's office from the fact that over ten thousand pieces of mail matter were sent out during the year 1904. It is no longer possible for a busy man or woman to carry on the work of the Association unless the bulk of the work is delegated to a stenographer and the sum allowed for clerical help is not sufficient to employ reliable help. Another difficulty is the storage of the Association archives, stock of REVIEWS, and reprints. This material weighs over 3000 pounds and fills a large room. If the membership could be increased to 1500, it would be possible to allow six or seven hundred dollars to a permanent secretary and place the business management of the Association on a sound and permanent basis.

Respectfully submitted,

GEO. L. MEYLAN,
Secretary.

Voted to accept the report.

Mr. Emanuel Haug, Treasurer, presented the following report.

A. P. E. A. TREASURER'S REPORT.

April 18, 1905.

Receipts.

Oct. 24, '04	From auditors	$26 46
Feb. 6, '05	Geo. Meylan, M.D., Secretary	50 00
	Total	$76 46

Expenditures.

Nov. 14, '04	Louis Weiss & Co., printers—		
Jan. 12, '04	2000 receipts	$3 25	
Feb. 17, '04	2000 letter heads	7 75	
Feb. 23, '04	500 envelopes, No. 10	2 25	
Feb. 29, '04	1300 circulars for dues	2 75	
Feb. 29, '04	250 envelopes for Dr. Fitz	1 25	
Apr. 20, '04	100 blank sheets	50	
			$17 75

Nov. 15, '04	Postage		08
Feb. 6, '05	Louis Weiss & Co., printers—		
Oct. 22, '04	2000 letter heads	$8 00	
	250 envelopes	1 25	
Nov. 3, '04	2000 envelope covers	4 50	
	1000 envelope returns	2 25	
Nov. 12, '04	1000 membership cards	6 50	
Nov. 25, '04	6000 slips for dues	9 00	
	1275 slips for dues	2 25	
Nov. 30, '04	1000 blank sheets	1 00	
	500 blank sheets	75	
	Express	15	
			$35 65
Feb. 6, '05	Postage		12
Mar. 14, '05	Louis Weiss & Co., printers—		
	2000 cover envelopes	$4 50	
	1000 addressed envelopes	2 25	
	1000 blanks	2 25	
			$9 00
Mar. 14, '05	Postage		04
	Total		$62 64
	Total receipts	$76 46	
	Total expenditures	62 64	
	Cash on hand April 18, '05	$13 82	

EMANUEL HAUG,
Treasurer.

Audited and approved:

E. H. ARNOLD,
F. W. HARVEY.

President Gulick appointed Dr. E. H. Arnold and Mr. J. Blake Hillyer auditing committee to audit the Treasurer's Report.

Dr. Gulick introduced Mr. William A. Stecher, who extended a cordial invitation to all members of the Association to attend the Turnfest of the North American Gymnastic Union to be held at Indianapolis in June.

The following persons were nominated by the National Council for election to honorary membership in the Association:

The Crown Prince of Sweden.
Prof. Angelo Mosso, University of Turin, Italy.
Prof. F. A. Schmidt, University of Bonn, Germany.
Dr. E. Hitchcock, Amherst College, Amherst, Mass.
Dr. D. A. Sargent, Harvard University, Cambridge, Mass.

They were elected unanimously.

The Secretary presented the following amendment to the Constitution offered by Dr. Mulliner and printed in the Review three months before the Convention in accordance with the Constitution.

Resolved, That the National Council shall continue in office until the end of the calendar year instead of immediately after the Convention.

An amendment was carried to substitute December 1st, instead of the end of the calendar year. The amendment to the Constitution as amended was carried unanimously.

The President called the attention of the members of the Convention to Article 42 of the Constitution that "Any act of the Council can be taken up by the Convention."

The President instructed all the members present who were not members of local societies to adjourn to another room for the purpose of electing three new members at large to the National Council. The following persons were elected: Dr. F. N. Whittier, Bowdoin College, Brunswick, Me.; Dr. Rebecca Stoneroad, Public Schools, Washington, D. C.; Mr. Carl Schraeder, Geneseo Normal School, Geneseo, N. Y.

Dr. Gulick reported that the committee appointed to award gold medals for essays presented at the St. Louis Conference, had awarded a gold medal to Dr. C. Ward Crampton of New York for his essay on "The Effects of Exercise on Blood Pressure."

The medal was presented to Dr. Crampton.

Dr. Arnold reported that the Auditing Committee had looked over the Treasurer's Report and found it correct. The report was accepted.

Dr. George W. Fitz gave notice of a proposed change to the Constitution providing for a new method of organizing the National Council with a view to giving representation to all members of the Association at the Convention.

After announcements by Dr. Meylan, the meeting adjourned.

EXECUTIVE COMMITTEE, May 3, 1905.

Present: Drs. Gulick, Savage and Meylan, Mr. Hillyer and Mr. Haug.

The minutes of the previous meeting were read and approved.

The Secretary presented the following report:

Financial Report of Secretary's Office for the month of April, 1905.

Receipts.		*Expenditures.*	
Dues	$176 00	Messenger from Dr. Gulick	50
Subscriptions	12 00	Exchange on checks	50
Back REVIEWS and reprints	13 68	Express	1 90
Balance from March 31	209 96	Blank book	1 00
		Postage	16 76
		Rebates to local societies	49 00
		Credited to Publication Fund	85 18
		Clerical help acc't	33 34
		Cash balance, April 30, 1905	223 46
	$411 64		$411 64

The report was accepted.

The following persons were dropped for non-payment of dues: Miss Clara Maude Berryman, Sarah A. Bond, M. D., Caroline A. Cabot, M. D., Harriet L. Clapp, Mr. Joseph Henry Harrison, R. C. Massman, Miss Eleanore P. Norvell, Miss Eldora K. Richardson, Mr. Alexander Sturrock, Miss Mabel C. Salter, Miss Anita J. Turner, Fred I. Trobb, Int. Y. M. C. A., Miss Corinne B. Van Norman, F. P. Valdes, Miss Grace Whitaker.

The following persons were elected to membership in the Association:

Miss Agnes Aiguier, 158 Summer Ave., Newark, N. J.

Miss Harriet Avery, 1230 Amsterdam Ave., New York City.

Miss Daisy Berry, 1115 Bergen St., Brooklyn, N. Y.

Miss Caroline A. Bronson, Principal Bronson School, 313 Hope St., Providence, R. I.

Miss Ruth Burchenal, 142 West 104th St., New York City.

Miss Frances S. Chapman, The Armitage School, Wayne, Pa.

Edwin C. Earl, care of Y. M. C. A., Rock Island, Ill.

Louise M. Fisher, 41 East 70th St., New York City.

William Rae Harper, 625 Ocean Ave., Greenville, N. J.
John Sherman Helmer, 668 12th Ave., Lorain, Ohio.
Lillian McConville, 397 Elm St., New Haven, Conn.
Mr. Henry Panzer, 154 West 57th St., New York City.
Grace Merton Patterson, 76 Pleasant St., Providence, R. I.
Henry S. Pettit, M. D., Adelphi College, Brooklyn, N. Y.
Elizabeth W. Peterson, 568 Chapel St., New Haven, Conn.
Albert D. Pinkham, 63d St. and Central Park West, New York City.
Aurilla Colcord Poté, 65 Central Park West, New York City.
Lu Ella Skelton, 370 Front St., Hempstead, L. I.
Tilden H. Stearns, Cambridge Y. M. C. A., Cambridge, Mass.
Annie L. D. Swan, State Normal School, Mansfield, Pa.
Marion C. Turrill, 2626 Broadway, New York City.
Sadie S. Utter, 102 Davenport Ave., New Haven, Conn.
Alice M. Walker, Glenolden, Del. Co., Pa.
Winifred Baxter Whittemore, Kent Place, Summit, N. J.
Ellen Hope Wilson, 23 Locust St., Flushing, L. I.
M. Bergman Osterberg, Dartford, Kent, England.

It was voted to send out a mail vote to the entire Council on the headquarters of the National Council during the next two years.

The meeting adjourned.

GEORGE L. MEYLAN,
Secretary.

EDITORIAL NOTE AND COMMENT.

This number of the REVIEW is given up largely to papers read at the National Convention of the American Physical Education Association. It was found to be impossible to publish all of the papers, but the September number will contain most of the remainder. It seems wise to give these papers as early publication as possible in order that those who were unable to attend the Convention may also benefit by it.

The Convention was very satisfactory from every standpoint. Both the general and sectional meetings were very fully attended. The main topic "dancing" received a long deserved consideration and was very satisfactorily treated, the emphasis being rightfully placed upon gymnastic and æsthetic rather than upon social dancing. Social dancing, in fact, received many adverse criticisms and occasional unqualified condemnation.

The suggestion of Dr. Meylan in his report as Secretary of the American Physical Education Association, that a permanent secretary be secured, is of timely interest. Nothing is calculated to be more effective in disorganizing the affairs of the Association than frequent changes in the offices of Secretary of the Association and Editor of the REVIEW. The advantage of having permanency in these offices cannot be realized by anyone who has not occupied the positions. It seems as if the time had arrived when the Association could afford to employ a responsible, well trained person who could fill both the offices of Secretary and Editor for a period of five or more years (as was done 1897-'01), and by persistent and consistent work build up the Association.

During the past year the combined payments for clerical work and salaries has been $800, a sum sufficient to enable the proposed secretary-editor to employ a high-class stenographer who could adequately run the clerical side of the double position, and leave three or four hundred dollars a year as salary for the secretary-editor himself. The secretary-editor would thus be freed from the petty clerical work of his department and could give more time and energy to constructive work for the Association and the REVIEW.

If, as seems entirely feasible, the sum of $1000 could be appropriated for this expense, the Association would largely benefit from the increased amount of time which could then be devoted to the interests of the REVIEW. This is the logical step to be taken now for the development of the Association, and that it is perfectly practicable and eminently desirable is recognized by many of the members of the Association. It is entirely in accordance with the constitution proposed for adoption at the New York meeting in 1901, but cannot be directly carried out under the present constitution, which in many respects is far from an ideally constructed instrument.

The plan which seems most feasible would be to have the Council establish by vote the duties of the Editor, making these include editing the REVIEW, collecting the dues of the Association, carrying on all correspondence relating to membership and to acts of the Council; in other words, all the work of the present Secretary, except recording the meetings of the National Council and Executive Committee.

This arrangement would make the shifting of the headquarters of the Association less disturbing to its affairs, since the routine work of the Association would be carried on independently, and especially since the address of the Secretary-Editor would remain constant. The permanence of this office would lessen somewhat the political aspect of changes in the Association's headquarters and would make the other offices at once less important and more honorary than at present. It would avoid the expensive blunders which have been made in conducting the affairs of the Association and would make it impossible for it to be seriously harmed by possible errors of incompetent or self-seeking officers.

A STATISTICAL SUMMARY OF THE DEVELOPMENT OF THE A. P. E. A. AS SHOWN BY INCOME AND MEMBERSHIP.[1]

Year	Total income (including balance from previous year).	Income from Dues.	Members.	New Members.	Resigned or Dropped.	Total Membership.
1885	$34.00	$34.00	49			
1886 and 1887	127.20 (2.20)	92.00	119			
1888 and 1889	98.00 (52.74)	98.00	190			
1890	245.00 (?)	245.00	333			
1891	315.00 (?)	272.00	514			
1892	519.00 (00.00)	406.00	640			
1893	579.00 (212.66)	[3]367.00	635			
1894	[2]799.00 (2.90)	[3]445.10	560			
1895	570.34 (250.44)	131.00	661			
1896	533.51 (?)	418.00	661			
1897	926.07 (130.51)	516.00	550	166		716
1898	894.31 (74.75)	[4]707.50	671	96	112	879
1899	1,064.39 (287.78)	607.00	567	128	22	848
1900	1,006.78 (50.75)	645.49	703	110	263	1076
1901	1,072.50	658		72	5	819
1902	1,012.07 (72.32)	691		61	47	828
1903	[6]1,928.56 (143.07)	1,157.50[7]	790	212	45	1025
1904	2,097.51 (203.25)[8]	1,221.10[7]	763	119	44	1091

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1. Made up from the Secretaries' and Treasurers' Books and Reports as far as obtainable. 2. Including a contribution of $341.00 by some members to the Publication Fund. 3. Including both dues and sale of Proceedings. 4. Including back dues from a number of old members. 6. Change of dues from $1.00 to $2.00. 7. Less rebates to Societies. 8. Deficit.

The rapid development of the Association in the past ten years is evidence of the value of stability. In that time there have been but three essential changes of administration (Boston, 1895 to 1901; New York, 1901 to 1903, and 1903 onward). No stronger argument for the importance of this arrangement can be quoted than the deficit of more than $400 which has been displaying itself in the reports of the Secretary for the past two years, and which apparently arose in the process of learning how to carry on the work of the Association when the headquarters were changed from Boston to New York.

New York is nobly redeeming its early mistake and the affairs of the Association are now in a very prosperous condition.

This plan is similar to that adopted by the American Society for the Advancement of Science and the National Education Association, and has proved most satisfactory for both.

That a thoroughly competent person could be found who would be willing to take the responsibility of such an office, while not absolutely assured, is yet reasonably probable. That when found, the present Secretary and the present Editor will give him God speed, goes without saying.

NEWS NOTES.

SUMMER SCHOOLS WITH PHYSICAL TRAINING DEPARTMENTS.

July 5-Aug. 15. Harvard Summer School of Arts and Sciences. Chairman, N. S. Shaler, S.D., LL.D. Clerk, J. L. Love, 16 University Hall, Cambridge, Mass.

July 6-Aug. 16. New York University Summer School, University Heights, New York City. Address, Prof. Leslie J. Tompkins, Registrar.

July 6-Aug. 17. Columbia University Summer School. Address the Registrar, Columbia University, New York City.

July 6-Aug. 17. Yale University Summer School of Arts and Sciences. Pres. Arthur Twining Hadley, LL.D. Director, Prof. E. Herschey Sneath, New Haven, Conn.

July 8-Aug. 18. The Chautauqua Summer School, Chatauqua, N. Y.

The National Educational Association will hold its Forty-fourth Annual Convention at Ashbury Park and Ocean Grove, N. J., July 3-7, 1905. President, W. H. Maxwell; Secretary, Irwin Shephard, Winona, Minn.

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GEORGE WELLS FITZ, M.D.
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American Physical Education Association.

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Second Vice-President, Lory Prentiss, Laurenceville, N. J.

Third " " J. Blake Hillyer, 23 Tompkins Ave., New Brighton, N. Y.

Treasurer, Emanuel Haug, 137 West 90th Street, New York, N. Y.

Editor, Geo. W. Fitz, M.D., 483 Beacon St., Boston, Mass.

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AMERICAN
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GEORGE WELLS FITZ, M.D.
Editor.

VOL. X. SEPTEMBER, 1905. NO. 3

THE TRANSITION FROM MEDIEVAL TO MODERN TIMES—CHAPTERS IN THE HISTORY OF PHYSICAL TRAINING.

FRED EUGENE LEONARD.

Oberlin College.

I. THE PERIOD OF THE RENAISSANCE AND THE REFORMATION.

The universities of the Middle Ages made an important contribution to the intellectual advancement of Europe, but they could not break the bands of ecclesiastical tyranny that still fettered the human mind. It required the joint action of other and more potent forces to provided escape from a conception of the world and the flesh which associated them with the devil, and to weaken the authority of that theological dogma which centered the thought and imagination of men for centuries upon the rewards and punishments of a future state and meanwhile paralyzed or thwarted every effort to master the resources or investigate the phenomena of the material universe. Man's rightful heritage upon this earth was not yet restored to him. In some way the feeling of personal dignity and independence must be aroused, the spirit of emulation provoked, and his powers of achievement challenged as they had never been before.

Among the chief factors in this process of transition from the medieval to the modern world was the Revival of Learning,—

that appreciative study of the Greek and Latin classics and all the long-neglected records of ancient civilization which supplied the Western nations with a new ideal of life and culture. The recovered masterpieces of literature and art excited the passionate admiration of scholars; they reveled in the free existence of what seemed to them a Golden Age, rich in such treasures as they had begun already to covet for themselves. While Italy was thus absorbed in antiquarian research, profound changes in Church and State were adding to the wide-spread ferment of ideas. The Eastern or Greek Empire became extinct when Constantinople, its capital, surrendered to the Turks in 1453; the Holy Roman Empire, its fictitious counterpart in the West, was fast losing whatever authority it had once possessed, and in the place of universal monarchy a group of separate and lusty nationalities—England, France, and Spain—were about to encroach upon the soil of Italy and Germany and dispute with each other the right to European leadership. The Pope no longer enjoyed political supremacy and the moral force of the Roman Church was abated; the conception of ecclesiastical unity was soon to receive a rude shock at the hands of the Protestant Reformation. To these influences must be added the incalculable effects produced by the invention and application of printing, gunpowder, and the mariner's compass; the promulgation of the Copernican theory of the solar system; the opening of a new route to the Indies by way of the west coast of Africa and the Indian Ocean, the discovery and exploration of America, and the crossing of the Pacific.

The movement known as the Revival of Learning had its origin in Italy during the fourteenth century. It was Petrarch (1304-1374) who introduced a new and more fruitful method of studying such portions of the Latin classics as were possessed by medieval students, and who opened their eyes to the importance of Greek literature, at that time a sealed book to the men of Western Europe. Enthusiastic scholars visited Constantinople to collect manuscripts and place themselves under the tuition of learned Greeks in that city; texts were discussed, and copies and translations made; commentaries, grammars, and dictionaries were compiled; and then the art of the printer stepped in to spread this mass of reappropriated knowledge broadcast. Scholarship became a passport to preferment in state and church alike, and so far were men of letters carried by their love for the classics that abandoning the mother-tongue they adopted the speech of Greece and Rome and sought to imitate and rival the best writers of a bygone age.

The pursuit of the new learning was at its height when the invasion of Italy by Charles VIII., near the close of the fifteenth century, opened the way for a series of inroads from France, Spain, and Germany, and thus scattered the ripe fruits of the Italian Renaissance among these nations, uniting the scholars of all Europe by the bond of a common culture. In Germany, where the application of a critical knowledge of Greek and Hebrew to the study of the Bible had transformed it into a new book in the minds of the people, the serious temper of the race and the nature of the problems that confronted it made the Protestant Reformation (1517-1648) a natural consequence of quickened intellectual life, and caused the Renaissance to take on this form. Both movements, the Italian and the German, were well advanced before England began to be powerfully affected by them, towards the middle of the sixteenth century.

To the Italian "humanists" of the fifteenth century we owe what is still known as a classical education. The greatest schoolmaster of them all was Vittorino da Feltre (1378-1446), who undertook the training of the sons of Marquis Gian Francesco Gonzaga at Mantua in 1425. So earnest and successful was this teacher and so widely did his fame extend that other pupils were added from time to time, until most of the princely houses of Italy, together with some in foreign countries, were represented at the school, to which many in humbler station were also admitted. Latin, Greek, and classical archeology formed the basis and main body of instruction. The chief end was to enable pupils to read and understand the best works of the ancients and to express themselves with elegance in these foreign languages. It was, in fact, an attempt to train new citizens of Greece and Rome, and to reproduce for them the life of the past.

This curriculum, the natural product of the Italian Renaissance, was afterwards given a more definite form by the German Calvinist, John Sturm (1501-1589), the most influential teacher of the sixteenth century. The school at Strasburg of which he was the head (1538-1583) enjoyed a European reputation at that period, and numbered its pupils by the thousand, drawn from every country and including hundreds who were of noble birth. For several centuries the system of education which he elaborated and stereotyped continued to be the prevailing pattern for the great majority of European secondary schools. Little by little the course of instruction and training had been contracted and made more barren until its object was no longer the appreciation of classic masterpieces as literature, but merely a knowledge of the Latin and Greek languages—words in place of ideas, and the form without the spirit and substance. The mother-tongue was to give way to Latin, which the pupil studied from the time of his entrance, at the age of seven, throughout the entire ten years of his stay. Greek was introduced in the fifth year, and to these two subjects little or nothing was added.

The Strasburg school served as a model for the Jesuits, who soon after the founding of their order (1534) became "the instructors of Catholic, and even, to some extent, of Protestant Europe." On the same basis, but modified by the plan of the Jesuits, the great public schools of England were established—Winchester, Eton, and Westminster.

The customs of chivalry had not ceased to shape the early training of an Italian gentleman at the time when *Vittorino da Feltre* taught in Mantua. It was therefore natural that he should incorporate in his school some of the characteristic features of knightly education. The staff of assistants included special teachers of dancing, riding, fencing, and swimming, and to these exercises were added wrestling, running and jumping, archery, ball games, hunting and fishing, and mock battles between two parties, or contests in which one side sought to storm the castle or surprise the camp of its opponents. The ample grounds about the villa which had been converted into a school building were well adapted for such sports, and all the pupils were required to share in them. Vittorino himself often joined them, it is said, and occasionally led them on excursions into the surrounding country, extending as far as Lago di Garda, Venice, and the Alps. He insisted on moderation in food and drink, and did not allow weather or season to interfere too much with life in the open air.

Vittorino had thus succeeded in combining physical with mental training and bringing them within the reach of every pupil; but outside of the schools for young noblemen, which continued to exist in various parts of Europe as late as the eighteenth century, he seems to have had few, if any, successors in this respect until Basedow opened the "Philanthropinum" at Dessau, in 1774. During the more than three hundred years that intervene, however, much was written by educational reformers and others in commendation of bodily exercise and recognition of its right to a place in the curriculum; and some of these authors, theorists though they were, occupy an important position in the history of physical training, as links between the present and the past. Vittorino, indeed, had only applied in practise the pedagogical principles already outlined by another Italian humanist, *Pietro Paulo Vergerio* (1349-1428), in a brief treatise on education sent to the young Ubertino di Carrara, whose tutor he had been at the court in Padua. This letter, which was afterwards printed and passed through many editions, refers repeatedly to ancient Greeks and Romans, as authorities or by way of illustration, and devotes two of its chapters to the subject of physical exercise. *Maffeo Vegio* (1407-1458), who began life as a scholar and poet but later entered the service of the Church at Rome and finally joined the order of Augustinian monks, wrote one of the most notable pedagogical works of the fifteenth century, and in the chapters relating to physical training shows in a similar way the influence of his classical studies. To the same category belong *Enea Silvio Piccolomini* (1405-1464), better known as Pope Pius II., who was at one time a secretary at the court of Emperor Frederick III., and in 1450 prepared a tractate on the subject of princely education; *Francesco Filelfo* (1398-1481), who wrote to the Duchess Regent of Milan, about 1475, suggesting a method of education suitable for her young son; and *Jacopo Sadoleto* (1477-1547), humanist and churchman, friend of Luther, Melanchthon, Erasmus, and Sturm, and author of a book (1530) on education which indicates a return to the old Athenian ideal and type.

Two other Italian writers are worthy of more extended notice. *Girolamo Cardano* (1501-1576) had studied at Pavia and Padua, and travelled in France, England, Scotland, the Netherlands, and Germany. He obtained his doctorate in medicine and practised that profession, devoting much of his time, however, to researches which bore fruit in a long series of scientific and philosophical works. In his interesting autobiography he tells of his own early practise in running and jumping, riding, fencing, and swimming, and elsewhere describes at length a great variety of ancient and modern feats of strength and skill. His work on the Care of Health (De sanitate tuenda libri IV), of which several editions appeared, contains an independent, systematic, and scientific treatment of the hygiene of bodily exercise, discussing its value and effects in general, the physiological classification of exercises into violent or light, rapid or slow, continuous or interrupted, etc., and the nature and usefulness of numerous special forms, which belong not only to past ages but also to contemporary life and customs.

Hieronymus Mercurialis (1530-1606), a famous physician, and widely known throughout Europe on account of his medical writings, while he was still a young man, in the household of Cardinal Alexander Farnese at Rome, began his literary career with a treatise on the Gymnastics of the Ancients (De arte gymnastica)—a book which seems to have enjoyed a remarkable degree of popularity and is often cited by more recent writers. It was first published at Venice in 1569, but at least three more editions appeared in Venice and one in Paris during his life-time, and others after his death, including one in Amsterdam as late as 1672. Out of his rich store of classical learning—the first edition contains a list of ninety-six Greek and Latin authors upon whom he has drawn—Mercurialis seeks to reproduce for his readers the ancient gymnasia and gymnastic exercises; but in the second half of the volume he leaves the descriptive and historical, and turns to the hygienic and medical aspects of exercise, as viewed from the critical standpoint of the physician. Somewhat like Cardano, he first considers the value of exercise in conditions of health and disease and the general principles that govern its application, and then takes up the nature and effects of particular exercises in some detail. According to the title page the work was not intended for the use of physicians only, but for all who were interested in the study of archeology or in the preservation of health.*

In Germany *Martin Luther* (1483-1546) realized the recreative and moral value of bodily exercise, and recommends especially such knightly sports as fencing and wrestling. The Swiss reformer *Ulrich Zwingli* (1484-1531), writing on the subject of education in 1524, makes suggestions regarding diet and clothing, and refers to running, jumping, hurling stones, wrestling and fencing as a means of acquiring strength and skill. He also considers wrestling and fencing a useful preparation for military service. *Joachim Camerarius* (1500-1574), who taught in Nuremberg, Tübingen, and the university of Leipsic, and was the friend and biographer of Melanchthon, published in 1544 a brief Dialogue on Bodily Exercise (Dialogus de gymnasiis). The author believes that boys should be encouraged to run, jump, wrestle, fence, and play ball out-of-doors, and one of the speakers, after mentioning the gymnastics of the ancients and the performances of the old Germans, describes to his companion a model school for the common people in which the teacher provides for indoor practise in hanging from a bar, climbing a rope, lifting weights, and matching strength with an opponent in various ways, and for a number of active games in the open air, some of them described in the text. Among the most illustrious names in the history of educational reform is that of *Johann Amos Comenius* (1592-1671), a Moravian pastor and teacher who suffered persecution and banishment in the course of the Thirty Years' War. In his writings he allots eight hours of the day to sleep, eight to work, and eight to meals, the care of the health, exercise of the body, etc. He would have about every school building a playground, where the boys might run and jump and enjoy their games, since it is necessary to put the body in motion and allow the mind to rest. A half-hour of recreation is to follow each hour of study. He would let pupils play to their hearts' content, but forbids wrestling, boxing, and swimming as either useless or dangerous.

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*The table of contents, translated, is given in full at the foot of pages 477-479 in the Report of the United States Commissioner of Education for 1891-92, Volume I.

Juan Luis Vives (1492-1540), a well-known Spanish scholar and at one time tutor in the family of Henry VIII. of England, published several works on education which contain frequent mention of bodily exercise. He regards it as necessary for the health of growing boys, and appreciates the educational value of games.

The typical figures of the French Renaissance is *François Rabelais* (1490?-1553), monk, physician, and humorist, whose novels Gargantua (1535) and Pantagruel (1533) contain his revolutionary views on education. The young gentleman Gargantua is provided with an ideal tutor in the person of Ponocrates. After three hours of lectures in the morning they spend an hour or so in ball-games out-of-doors, followed by dinner, an hour of music or quiet games, and three more of study in the afternoon. Now his physical training, the object of which is plainly to prepare for "the gentleman's occupation, war," begins in earnest. With the author's habitual exuberance of detail Esquire Gymnast is made to teach his pupil horsemanship, how to handle the lance while in full armor, vault on horseback and leap from one horse to another, wield the battle-axe, handle pike, sword, dagger, and shield, and hunt the bear, deer, wild boar, and lesser game. He also practises wrestling, running, broad and high jumping, swimming, rowing and sailing a boat, climbing ropes, masts, trees, and walls, throwing stones, hurling spears, shooting with bow and cross-bow and with firearms, hanging and travelling sideways on a pole fixed in two trees, and putting up leaden dumb-bells.*

The eminent French essayist *Michel de Montaigne* (1533-1592), in discussing at some length the education of children, has comparatively little to say of their physical training; but his few words on that subject have been frequently quoted, and will still bear repetition. They are found in Book I, Chapter 25, of the Essays (1580). Health and strength are necessary, he says, for "the soul will be oppressed if not assisted by the body. . . . I know very well how much mine groans under the disadvantage of a body so tender and delicate that eternally leans and presses upon her. . . . Our very exercises and recreations, running, wrestling, music, dancing, hunting, riding, and fencing, will prove to be a good part of our study. I would have his outward behavior and mien, and the disposition of his limbs, formed at the same time with his mind. It is not a soul, it is not a body, that we are training up; it is a man, and we ought not to divide him into two parts; and as Plato says, we are not to fashion one without the other, but make them draw together like two horses harnessed to a coach. By which saying of his does he not seem to allow more time for, and to take more care of, exercises for the body, and to believe that the mind in a good proportion does her business at the same time too? . . . Inure him to heat and cold, to wind and sun, and to danger that he ought to despise. Wean him from all effeminacy in clothes and lodging, eating and drinking; accustom him to everything, that he may not be a Sir Paris, a carpet-knight, but a sinewy, hardy, and vigorous young man."

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*Chapter 23. The entire passage is given in English at the foot of pages 472-474 in the Report of the United States Commissioner of Education for 1891-92, Volume I.

An English contemporary of Rabelais, and of Henry VIII., was *Sir Thomas Elyot* (1490-1546), intimate with Sir Thomas More, deeply stirred by the spirit of the Renaissance, and held in high repute for his scholarship. "The Boke named the Governour," published by him in 1531, relates to the education suitable for a gentleman's son who is preparing to serve the commonwealth. It passed through a half-dozen editions within the next fifty years, and has been recently reprinted (London, 1880). Chapters 16-22, 26, and 27, comprising almost a sixth of the entire work, are concerned with physical training, which is treated under the following heads: "Of sundry forms of exercise necessary for a gentleman. Exercises whereof cometh both recreation and profit [Here he mentions the use of dumb-bells of lead or other metal, lifting or throwing the heavy stone or bar, wrestling, running, swimming, handling the sword and the battle-axe, riding, and vaulting]. The ancient hunting of Greeks, Romans, and Persians. Dancing. Of other exercises which, moderately used, be to every estate of man expedient. That shooting in a longbow [the 'noble art of archery'] is principal of all other exercises."* Elyot's fondness for the classics appears in his very numerous references to Greek and Roman examples or authorities.

While Mercurialis was writing his De Arte Gymnastica and Montaigne his Essays, *Richard Mulcaster* (1530?-1611) was doing hard work for scant pay as Master of the Merchant Taylors' School in London (1561-1586). Among other striking points of difference, he stands in pleasant contrast with his more successful contemporary, Sturm, at Strasburg, in his attitude toward the bodies of the young. His "Positions," which appeared in 1581 and was dedicated to Queen Elizabeth, deals with the principles to be observed in the training of children, "either for

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*Quotations from these chapters will be found in Barnard's Am. Jour. Educ. XVI: 490-496 (1866). In 1545 *Roger Ascham* (1515-1568), author of the The Scholemaster, published his "Toxophilus, the schole of shootinge conteyned in two bookes."

skill in their book or health in their body." A third of the volume is given up to the physical side of education, and the nature of the contents cannot be better revealed in brief space than by a partial list of the chapter headings, slightly altered and condensed:—Chapter 4, That exercise must be joined with the book, as the schooling of the body. 6, The importance of exercise and physical training [as an agent of health]. 7, The order followed in the present treatment of the subject. 8, Definition and varieties of exercise [athletics, martial exercises, exercises for health, etc.]. 9, Choice of exercises. 10-15, Of loud speaking, loud singing, loud and soft reading, much talking and silence, laughing and weeping, holding the breath 16-27, Dancing, wrestling, fencing, top and scourge, walking, running, leaping, swimming, riding, hunting, shooting [archery], ball games. 28-34, Circumstances to be considered in exercise, nature and quality of exercise, the bodies which are to be exercised; place, time, quantity, and manner of exercise. 35, The training master [the same teacher is to serve for both mind and body]. Of all books on gymnastics, he says in this last chapter, "I know not any comparable to Hieronymus Mercurialis, a very learned Italian physician now in our time, which hath taken great pains to sift out of all writers whatsoever concerneth the whole gymnastical and exercising argument, whose advice in this question I have myself much used, where he did fit my purpose." Mulcaster seems never to have caught the ear of the age in which he lived, and it is only within the last few decades that he has been rescued from oblivion and rated at his real worth, as a man far in advance of his time. His book was reprinted in London in 1888.

Standing at the very end of this period of the Renaissance and the Reformation is *John Milton* (1608-1674), whose Tractate on Education (1644), though not of great value in itself, is yet deserving of mention here because it associates a form of bodily exercise with mental and moral training. In his model school, intended to bring up gentlemen's sons "to perform justly, skilfully, and magnanimously, all the offices both private and public, of peace and war," he would have the young men, between the ages of twelve and twenty-one, live together in barracks, like the Spartan youth. "About an hour and a half ere they eat at noon should be allowed them for exercise, and due rest afterwards; but the time for this may be enlarged at pleasure. . . . The exercise which I commend first, is exact use of their weapon, to guard and to strike safely with edge or point; this will keep them healthy, nimble, strong, and well in breath; is also the likeliest means to make them grow large and tall, and to inspire them with a gallant and fearless courage. . . . They must be also practised in all the locks and gripes of wrestling, wherein Englishmen were wont to excel, as need may often be in fight to tug or grapple, and to close. . . . " About two hours before supper they are to be called out for their military motions under sky or covert; "first on foot, then, as their age permits, on horseback, to all the art of cavalry: that, having in sport, but with much exactness, and daily muster, served out the rudiments of their soldiership . . they may as it were out of a long war, come forth renowned and perfect commanders in the service of their country."

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Hieronymi Mercurialis Foroliviensis, de arte gymnastica libri sex, in quibus exercitationum omnium vetustarum genera, loca, modi, facultates, et quidquid denique ad corporis humani exercitationes pertinet, diligenter explicatur. Venice, "apud Juntas," 1573. 4°, 12+308+26 pages. A third and a fourth edition, bearing the same title, were published in Venice in 1587 and 1601. Still another edition appeared in Paris, in 1577; and finally one in Amsterdam, in 1672, with the following title:

Hieronymi Mercurialis Foroliviensis de Arte Gymnastica Libri Sex: In quibus exercitationum omnium vetustarum genera, loca, modi, facultates, et quidquid denique ad corporis humani exercitationes pertinet diligenter explicatur. Editio novissima, aucta, emendata, et figuris authenticis Christophori Coriolani exornata. Amstelodami [Amsterdam], Sumptibus Andreae Frisii, 1672. 8 3-4 x 7 1-8 in., 8+387+41 (index) pages, with about 25 figures, page engravings, and folding plates.

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A STUDY OF THE CHARACTERISTICS OF PHYSICAL TRAINING IN THE PUBLIC SCHOOLS OF THE UNITED STATES.*

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The present study was made during 1904-1905. The first Questionnaires were sent out during November, 1903. This study is one of a group of studies, which are to include the characteristics and extent of physical training and athletics in the colleges, normal schools, preparatory schools and public schools of the United States.

Mr. G. B. Affleck, now director of the physical department of the Iowa State Normal School presented a thesis for graduation at the Springfield Training school in 1901. His subject, "The Extent and Characteristics of Physical Training in the Colleges and Preparatory Schools of the United States," was the first in the series. He has just completed a study on the status of physical training in the public normal schools of the United States. We are now in the Springfield Training School conducting a study of the regulation and control of competitive sport in the public high schools, preparatory schools, state normal schools and colleges. These studies when completed will present a comparatively full survey of the characteristics and extent of physical training and athletics in the educational institutions of the United States.

For this paper which I am to present this afternoon, I am greatly indebted to the superintendents of schools, for their

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hearty response, and for the careful manner in which the blanks were filled out. The value of this article is dependent upon the number and the completeness of the replies, and I feel that this study presents a very fair view of the physical training in the public schools of the United States—from the fact that the replies were from a good number of cities, and from widely distributed cities, both geographically and in population as I shall show later.

Dr. Thomas M. Balliet, formerly superintendent of the schools in Springfield, Mass., now dean of the School of Pedagogy, of the New York University gave many valuable suggestions regarding the formation of the Questionnaire, so that as many facts concerning the subject might be obtained as possible.

Mr. P. B. Samson, now director of physical training in the Kansas State Normal School, Mr. E. S. Elliot, Assistant Physical Director in the Boston Y. M. C. A., and Mr. P. K. Holmes, Physical Director of the Peterboro, Ont. Y. M. C. A. co-operated in the study, and materially assisted in the collection and tabulation of the data.

The basis of the study were the cities listed in the latest United States Commissioners' Report of Education. There were 1120 cities, and a Questionnaire was sent to each superintendent of schools in the above. Of these:

77 or 6% were in cities of 50,000 or over.
80 " 7% " " " " 25-50,000.
299 " 26% " " " " 10-25,000.
433 " 39% " " " " 5-10,000.
231 " 21% " " " under 5,000.

From the 1120 to which Questionnaires were sent, 555 cities returned the Questionnaires, with the answers filled in, with more or less completeness—this study is based upon these replies. Of the 555 replies there were 58 from Class I (cities over 50,000 population) that is, 58 replies from 77 cities, or 74%. From Class II, (cities between 25-50,000) 48 replies were received. 48 replies from 80 cities, 60%. From Class III (cities between 10-25,000) from 299 cities to which Questionnaires were sent 153 answers came back, 51%. From Class IV (cities between 5-10,000) from 433 cities, 210 or 49% replied. In Class V (under 5,000) 231 cities, 86 or 33% replies.

Thus, briefly, the study is based on statistics from:

Class	I.	74%	of the total number of cities.
"	II.	60%	" " " " "
"	III.	51%	" " " " "
"	IV.	49%	" " " " "
"	V.	33%	" " " " "

The percentage of replies, you will see, was greater from the large cities. The distribution of the cities geographically is as follows:

New England	205	Questionnaires sent out	103	returned	50%
Middle	275	" " "	144	"	52%
Southern	134	" " "	43	"	32%
North Central, East	311	" " "	160	"	51%
" " , West	130	" " "	73	"	56%
Western	63	" " "	32	"	50%

New England—Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut.

Middle—New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, W. Virginia.

Southern—North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Tennessee, Texas, Oklahoma, Indian Territory.

North Central East—Wisconsin, Ohio, Michigan, Kentucky, Illinois, Indiana.

North Central West—Missouri, Kansas, Iowa, Nebraska, North and South Dakotas.

Western—California, Nevada, Utah, Colorado, Arizona, New Mexico, Oregon, Idaho, Montana, Wyoming.

Of the 555 cities which returned the Questionnaires 128 cities employ special physical training teachers—23% of the whole number.

These 128 cities arranged according to population are as follows:

Class I.	Of	58	cities	35	employ physical directors or	60%
" II.	"	48	"	20	" " " "	42%
" III.	"	153	"	34	" " " "	22%
" IV.	"	210	"	26	" " " "	12%
" V.	"	86	"	13	" " " "	15%

128 cities employ 291 teachers, 102 men and 189 women.

Class I.	In	35	cities there are	177	teachers	66	men,	111 women.
" II.	"	20	" " "	30	"	8	"	22 "
" III.	"	34	" " "	41	"	17	"	24 "
" IV.	"	26	" " "	28	"	8	"	20 "
" V.	"	13	" " "	15	"	3	"	12 "

The average length of time during which these 128 cities have employed special teachers of physical training is as follows:

New England,	7 years.	North Central, East,	5 years.
Middle Atlantic,	6 years.	North Central, West,	2½ years.
Southern,	3 years.	Western,	7 years.

Some of the cities which have had it longest are:

Oakland, Cal.,	15 years	Same teachers throughout.
Toledo, Ohio,	11 “	“ “ “
Waltham, Mass.,	13 “	“ “ “
Cincinnati, Ohio,	12 “	“ “ “
Washington, D.C.,	14 “	“ “ “

Some few others have had expert supervision for about as long—but not with the same teachers. The tenure of office in this profession seemed to be so varied that no very valuable statistics could be derived from the question in regard to length of stay in present position.

In the 128 cities there are 291 teachers employed, 189 or 65% women, and 102 or 35% men.

New York City leads the country in the number of teachers employed, and in the salaries paid. 55 teachers are employed, 15 of them men and 40 women. The salaries for men in the elementary schools range from 1200 to 1600 per year, for women from 900 to 1200. In the high and training school the salaries for men range from 1300-2400, for women from 1100 to 1900 per year.

In the country as a whole the salaries for men range from $500 to $4,000, women $360 to $2,500 per year.

In cities of Class I the salaries were for men from $800 to $4,000, most common salary $1,200, women from $600-$2,500, most common $1,050.

Class II.	men $900 - $1200	most common salary $1000.
	women $300 - $1200	“ “ “ 750.
Class III.	men $500 - $1000	“ “ “ 1000.
	women $450 - $1000	“ “ “ 800.
Class IV.	men part time	
	women $400 - $800	“ “ “ 600.
Class V.	men part time	
	women $360 - $750.	(Many part time.)

The employment of the different sexes in different sections of the country is of interest:

In New England there are 41 women to 16 men, 72% to 28%.
In the Middle States, 100 women to 39 men, 72% to 28%.
In the North Central, East, 27 women to 24 men, 53% to 47%.
In the North Central, West, 13 women to 18 men, 42% to 58%.
In the West, 6 women to 4 men.
In the South, 2 women to 1 man.

The marked increase in proportion of male teachers in the Middle West is probably due to the influence of the German Turners. The present rapid growth of physical training in the high schools and the desire for the supervision of athletics will probably increase the percentage of men employed. The necessity for the regulation and control of sport with the boys makes imperative male teachers. The evils arising from the presence of athletics in the high schools without adequate supervision are wide spread and openly acknowledged. I will show later from the Questionnaires that the tendency is toward regulating the sport and that will in the end mean regularly employed male teachers. These Questionnaires have brought out some striking facts. You will see that the demand for this type of teachers has come more or less indirectly from the boys themselves, in distinction from the corrective gymnastics which have been put into the grade schools, because the educators have seen the necessity for them. It is a curious fact which you as teachers will recognize, that the same tendency is developing among the high school girls. A certain type of exercise appeals to them, and slowly they are trying to gain it. In a few years it will be necessary to provide them with gymnasia and teachers fitted to give to them the type of exercise they will demand. In the high school the same physical training cannot be given to both boys and girls, as it can in the grade schools. Adequate and satisfactory teaching will be absolutely necessary for both sexes in the near future. That this fact is recognized by educators we can see by the number and wide spread distribution of high school gymnasia. There are in the 555 cities upon which we are basing our investigations 125 or 23% which have one or more high school gymnasia. Of these cities 61 do not employ any special teacher of physical training, 64 cities have gymnasia which also employ regular teachers of physical training. There are 149 high school gymnasia. 82 of these high school gymnasia are in 64 of the 128 cities with physical training teachers. 67 of these high school gymnasia are in 61 of the 427 cities without physical training teachers. In this count of gymnasia all cases were included where they had a room for the purpose of gymnastics. Sometimes they felt it to be inadequate, and sometimes it was rented. There were in process of construction 9 high school gymnasia, and one grammar school gymnasium.

No correct tabulation could be obtained from the data given about the grammar and primary gymnasia. It was evident from the answers that the definition of gymnasia varied widely. There were, however, 19 cities of the 128 with physical directors who provided more or less satisfactorily accommodation for gymnastics outside of the class room. Of these a number might certainly be termed gymnasia. Of the 427 cities without physical training teachers 4 had gymnasia for their grammar grades.

In answer to the questions about a number of schools provided with playgrounds, practically all answered that their schools were provided with them, Somerville, Mass., alone stating that they had no playgrounds.

In the 128 cities with physical directors 118 superintendents answered regarding the size of their grounds—54 or 45% regarded them of sufficient size, 39 said some were large enough, others too small, 27 said all of their grounds were too small. In the 427 cities without special teachers of physical training 340 superintendents answered the question, 166 or 49% regarded their playgrounds large enough, 86 said some were large enough, 88 stated that all their grounds were too small. There was much difference of opinion among the superintendents in regard to the size necessary for a playground. In a voluntary Questionnaire it was not practical to ask for the absolute size of the playgrounds. One superintendent stated that his grounds were not large enough to stand his pupils from elbow to elbow. Many cities have playgrounds under the park commissioners or other bodies. The statistics are as follows:

Class	I.	Of	58	cities	14	have	61	such	playgrounds.
"	II.	"	48	"	4	"	11	"	"
"	III.	"	153	"	18	"	35	"	"
"	IV.	"	210	"	17	"	24	"	"
"	V.	"	86	"	7	"	13	"	"

60 cities have 144 playgrounds aside from the school buildings. In 128 cities with physical training teachers there are 28 cities with 87 of such playgrounds, in the 427 without physical training, there are 32 cities with 57 of such playgrounds.

In 105 answers from 128 cities which have physical training teachers, 28 minutes a day was the average time devoted to recess, 12 have no recess, 11 did not answer the question:

Number	answering	5	min.	A.M.	9	P.M.	13.
"	"	10	"	"	19	"	24.
"	"	15	"	"	61	"	50.
"	"	20	"	"	11	"	11.
"	more than	20	"	"	4	"	1.
					104		99

Some had no recess in the morning or afternoon.

The table indicates the general distribution of those with a 5, 10, 15 and 20 minutes' recess, 62 or slightly more than half of the schools have 30 minutes a day recess. These same 128 schools devote on the average nearly 15 minutes (73 minutes per week) per day *additional time* to physical training.

In 427 cities *without* special physical training teachers 331 answer giving an average of 27 minutes per day for their recess time, 68 did not answer this question, 28 had no recess.

Number	answering	5	min.	A.M.	17	P.M.	52.
"	"	10	"	"	52	"	96.
"	"	15	"	"	227	"	165.
"	"	20	"	"	27	"	15.
"	"	30	"	"	5	"	0.
"	"	40-60	"	"	3	"	2.
"	"						
					331		330.

One had calesthenics in place of recess.

The average time additional to recess given to physical training in cities, *without* special teachers was 51 minutes per week or 10 minutes per day for the 195 cities giving attention to the subject. 232 cities give no additional time.

Of the 128 cities with special physical training teachers, 89 consider it practical to have regulated play during recess, 18 answered no and 21 did not answer. 26 do regulate the play, 77 consider it practical, but not advisable—the principle reason given was the lack of training of the teachers in this direction.

In the high schools of these same cities 41 recommend supervision, 50 say no, 37 did not answer. In the 427 cities *without* physical training teachers, 72 have regulated play in the grade schools. In the high schools of this class little interest was shown in the matter of the regulation of recess play, only 50 out of 427 answering the question, 22 believed it undesirable, 28 favored it.

The inquiry regarding the system of physical training used brought a large variety of answers. I have placed the replies in two groups first those with special teachers, second those without special teachers.

In the 93 cities with special teachers who answered, 32 used Swedish work, 7 the German system, the other 54 used various combination systems.

190 of the 427 cities without physical training teachers answered, 42 of these used the Swedish, the others were combinations of the different systems.

The answers enumerate 24 systems of various stripes.

In the cities *without* special teachers the systems are traceable largely to the available books: Posse, Enebuske, Bancroft and Betz are the names given most often to their systems. 67 state that they have no system. The general impression left from a careful perusal of the answers is that there is less discussion of systems and more study to meet actual conditions in a given city than formerly. The source of training of 111 out of the 291 teachers was given, 58 of these were trained in regular normal schools of physical training, the rest fitted privately. In the regular college course or in the summer schools of physical training, the details are as follows:

Boston Normal School of Gymnastics	**15.**
Milwaukee Normal School for the Turners	**15.**
Sargents Normal School	**9.**
New Haven Normal School (Anderson incl.)	**5.**
Emerson Normal School	**8.**
Posse Normal School	**3.**
Springfield Normal School	**2.**
Savages Normal School	**1.**
Harvard Summer School	**7.**
General Normal (yearly courses)	**7.**
Chautauqua	**4.**
General College course	**21.**
Privately trained	**14.**

Fifty-eight of 111 have taken technical training for the work—the others, including a goodly number among the stronger teachers have grown up with the profession, adding to their knowledge by the most accessible means—this is, of course, a temporary condition due to the demand for teachers, which hurries a man into active work before he has fully equipped himself for it. All indications point to a technically trained group of specialists, the majority of whom shall have been trained in the normal schools—for example, 10 years ago 15 or 8% of the Y. M. C. A. directors had received technical preparation, today 127 or 39%

have had such technical preparation. This large increase in trained men is due to the fact that they have two normal schools from which they secure the majority of the graduates, one at Chicago and one at Springfield, Mass.

In answer to question 16, "Would you think it wise to increase the time devoted to physical training?" the majority of the 128 cities where there are special teachers of physical training would *not* increase the time, the figures are as follows: 41 would increase the time, 64 would not increase the time, 23 did not answer.

In the 427 cities *without* special teachers the majority would increase the time, 232 cities give no time, 195 cities give an average of 10 minutes per day.

In answer to question 17, "What phases of physical training would you emphasize?" the superintendents *with* and *without* special teachers both emphasized the same things, namely, sports, plays, games, body building, all around development, organic vigor and corrective exercise.

The boys are much interested in competitive sports. They select most largely those calling for the greatest vigor.

In the high schools of the 128 cities with physical training teachers:

113	or	88	per	cent	have	football	teams	Class I.	33	or	91	per	cent
92	"	71	"	"	"	baseball	"	"	27	or	75	"	"
73	"	56	"	"	"	basketball	"	"	17	or	47	"	"
55	"	43	"	"	"	track	"	"	18	or	50	"	"

In 386 cities where there are no physical training teachers, the sports in the high schools are as follows:

319	or	83	per	cent	have	football	Class I.	19	or	100	per	cent
268	"	69	"	"	"	baseball	"	15	"	79	"	"
140	"	36	"	"	"	basketball	"	11	"	58	"	"
106	"	27	"	"	"	track	"	6	"	31	"	"

6 have ice hockey, 9 have tennis.

In the 128 cities where there are physical training teachers (Grammar Schools):

46	or	36	per	cent	have	football	Class I.	9	or	25	per	cent
42	"	33	"	"	"	baseball	"	10	"	27	"	"
18	"	14	"	"	"	basketball	"	4	"	11	"	"
19	"	14	"	"	"	track	"	5	"	14	"	"

In 386 cities where there are no physical training teachers (Grammar Schools):

160	or	44	per	cent	have	football	Class I.	12	or	63	per cent
164	"	44	"	"	"	baseball	"	10	"	52	" "
47	"	12	"	"	"	basketball	"	4	"	21	" "
24	"	6	"	"	"	track	"	1	"	5	" "

In no respect does the regular gymnasium work furnish a substitute for football and the various competitive games in the high schools, in fact where they have special teachers of physical training the percentage of cities having competitive teams is larger than in the cities without teachers. In 52 or 40% of the 128 cities with special physical training teachers the students employ coaches themselves in addition to the regular gymnasium teachers. In the 128 cities with special teachers 33 or 27%+have assistance from the school authorities (18) or by teachers acting voluntarily (15). In all 87 cities or 68% have coaching, the most of it separated from the work of the physical director. In 120 or 28% of the 427 cities *without* special teachers the students employ coaches. These 427 cities also have assistance from 35 coaches or 8%+of the school authorities (25) and from teachers acting voluntarily (10). 155 cities or 36% out of 427 have coaching for their teams. 87 cities or 68% of the 128 cities have coaches, most of them under the direction of students rather than the physical director. 155 cities or 36% out of the 427 cities *without* special teachers have coaches.

There is more football and other competitive sport in the high schools of cities with physical training teachers than in those without special teachers. These sports are managed largely by the students without the aid from the physical directors. In fact it would appear in many cases that these competitive sports have grown up without the co-operation of the school authorities or director, you might say almost in spite of them.

This lack of co-operation on the part of the school and the director may be due to lack of interest, lack of time, or inability on the part of the director to coach the various sports.

Careful study of the Questionnaires would seem to indicate that a portion of teachers were fitted chiefly for instruction in corrective gymnastics. The emphasis placed by the superintendents on plays and games and the demand for men to coach in the various sports indicate a desire to place the supervision of the boys' sport in the hands of a regular teacher. The large majority of the school superintendents approve of competitive athletics in high school. 115 of the 128 cities with special teachers approve of competitive athletics, 3 disapprove of competitive athletics and 10 did not answer. 102 of the 128 cities with special teachers have high school athletic organizations. In 427 cities without special teachers 323 approve, 24 disapprove, 8 are doubtful, 72 did not answer. 243 of these 427 cities have high school athletic organizations.

GRAMMAR SCHOOLS.

There is considerable difference of opinion among the superintendents regarding the desirability of competitive athletics for grammar school boys. (Question 19.) In the 128 cities with special teachers 43 approve of competitive athletics (as against 115 for high schools) 36 disapprove (3 in high schools) 7 are doubtful and 42 did not answer. In the 427 cities *without* special teachers 176 (323 in high school) superintendents approve of competitive sports for grammar school boys, 122 disapprove (against 24 in high school) 12 are doubtful, 117 did not answer. In the high schools 438 approve, 27 disapprove. In the grammar schools 219 approve, 158 disapprove.

The approval of competitive work in the high school by the superintendents is large and generous, in the grammar schools it is grudgingly given, with 158 who disapprove. 26 or less than 5% of the cities report grammar school athletic organizations. 345 or 62% of the cities report high school athletic organizations. The grammar school boy is not yet ready for strenuous competition nor has he developed organizing ability.

In most cases the high school boys need more thorough care and supervision than they secure. This supervision is gradually being forced upon the public schools by the evils in athletics, whether athletics has a good or bad effect on boys depends upon the way they are managed. Athletics well managed should be under the direction of a regular teacher who is responsible for the coaching, physical condition, finances and the discipline during the games and while traveling. His tact and leadership should secure a generous reception to all visiting teams and should encourage high ideals of courtesy and fair play.

The chief evils enumerated by the superintendents were injury to health and morals, dishonest coaches, neglect of work, jealousy, waste of time, energy and money, gambling, tendencies toward professionalism and neglect of the many for the few.

Four deaths were reported (true deaths) one said to be from exertion, one from football, two did not give the reason. One of the men reporting a death said, "The good results were too numerous to mention." Most of the men placed the blame for the evils on the lack of supervision rather than on the sport.

The good points emphasized were school spirit, physical, mental and moral health, increased school attendance, renders discipline easier, raises the standard of scholarship, develops self-control, business ability, manliness, proficiency, thrift, nerve, force, courage, makes them more alert, less sensitive. A study of the evils and benefits given by the superintendents would indicate that the benefits on the whole were considerably greater than the evils. Many of the evils seem to be due to bad management or lack of supervision.

The corrective work introduced by the educators to counteract the school desk with its confinement has come to stay. It fills a real need. The athletics introduced largely by the boys is also necessary. They have with instinctive discernment selected the sports requiring courage, manliness and physical vigor.

These inherent impulses of the boys should be more carefully directed. Rightly guided they afford large opportunity for both moral and physical development.

All school sports should be under the management of the school with expert supervision.

THE ALLEGED EFFEMINATION OF OUR AMERICAN BOYS.

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New York.

From October to December, 1903, a commission of educational experts from England visited and studied the educational conditions in America. No one subject of their report has been more generally commented on by the public press than that which refers to the effects of our large number of women teachers. In order that I may be perfectly fair in considering these criticisms, I venture to quote them with some detail. My quotations are taken from the "Reports of the Mosely Educational Commission to the United States of America, London, 1904." I have selected the statements from these reports as voicing the particular criticisms which we are to consider, because nowhere else have these criticisms been more fully or concisely made, as well as because they have attracted such widespread attention. It is not my aim to consider merely the report of the Mosely Commission as such. I take this report because it stands for the whole subject. Professor Henry E. Armstrong, Ph. D., LL. D., F. R. S. says, page 13:

"Most of us who are conversant with school work were struck by the distinctly low average of attainment in the American high schools. To what is this attributable? In part probably to the conditions which prevail in American life, but in large measure also, I venture to think, to the prevalence of mixed schools and the preponderance of women teachers.

"Admitting that it may be possible, even desirable, to bring up the two sexes together in the early years of school life, I venture to think that we must sooner or later come to admit that it is wrong to do so during the later years, if the object be the development of a virile man. To put the matter in very simple terms, it seemed to me on the occasion of my former visit—and the impression was confirmed during my recent visit—that the boy in America is not being brought up to punch another boy's head, or to stand having his own punched in a healthy and proper manner; that there is a strange and indefinable air coming over the man; a tendency toward a common, if I may so call it, sexless tone of thought.

"But if co-education be bad in itself, it becomes infinitely worse when the teachers are mostly women; they should rather be men mostly. Nowhere is the claim on behalf of women to equality with men put forward so strongly as it is in the United States. Nowhere, I believe, would it be found to be more disproved in practice, if carefully inquired into. Women have sought in recent times to prove that they can compete successfully with men in every field; they claim to have succeeded, but the claim cannot be allowed, I think. They have shown—what it was unnecessary to show—that they are indefatigable workers; and they have shown that they can pass examinations with brilliant success. But what has been the character of the examinations?

Almost invariably they have been such as to require the reproduction of learning, not original effort. History records but very few cases of women with any approach to originality; it proves the sex to have been lacking in creative, in imaginative power. Those who have taught women students are one and all in agreement that, although close workers and most faithful and accurate observers, yet, with the rarest exceptions, they are incapable of doing independent and original work. And it must be so. Throughout the entire period of her existence, woman has been man's slave; and if the theory of evolution be in any way correct, there is no reason to suppose, I imagine, that she will recover from the mental disabilities which this has entailed upon her within any period which we, for practical purposes, can regard as reasonable. Education can do little to modify her nature. The argument is one which women probably will not, perhaps cannot, appreciate. No better proof could be asked for, however, than is afforded by the consistent failure of women to discover special wants of their own—they have always merely asked to have what men have, to be allowed to compete with men. Domestic subjects have been taught in the most perfunctory manner possible."

This quotation gives an excellent summary of the general point of view of the gentlemen of the Mosely Commission.

Before proceeding to the consideration of the facts themselves, it is interesting to note that the critics do not think that woman's nature can be changed by education, but that man's can be, for Professor Armstrong says: "Education can do little to modify her nature."

Professor Armstrong evidently appreciates the force of social heredity in the case of boys, but not in the case of girls. This is to me an exceedingly interesting example of taking the two horns of a dilemma alternately, according to the point to be made.

Let us now examine the facts in the case. I draw my data from the schools of greater New York, because in New York City many of the problems of education are discovered in their most acute form; it is our largest American city, as well as because it has borne the brunt of especial criticism. In New York are seen the results of many conditions, such as congestion, which are not as yet equally apparent in smaller cities. To what extent is it true that the female teachers preponderate in the elementary schools?

We all agree that the teaching of children during the first few years of school life should be by women. The teaching of girls all through the elementary school should be by women, and one-half of the instruction of boys should be by women. To accomplish this result in New York there would be needed 9,463 women and 810 men. As an actual fact New York City has 9,565 women and 708 men.

It does not appear, then, that the assumption that these boys are being effeminized because of the excess of women teachers is a true one. They may be becoming effeminized, but if they are it is not because of the preponderance of women teachers in the secondary schools. I have not been to the pains to get together the data with reference to the proportions of men and women teachers in the colleges, for these are at present attended by less than 2 per cent of our population and thus cannot be of specific and general influence in the directions claimed.

Granting that the case has been made clear, with reference to at least the New York public schools, that any possible effeminizing has not been due to the preponderance of women teachers, it is still to be answered as to whether the American, and particularly the New York boy, is becoming effeminized at all. Statistics upon this subject seem to me wholly unavailable, so that I can only call attention to certain widely known and exceedingly significant facts. Prominent—possibly most prominent—in the life of the American boy outside of school is his devotion to sports and games. Personal experience with this group of activities extending over twenty-four years and professional relations to athletic sports and gymnastic games for the last nineteen consecutive years have given me the opportunity for some conclusions with reference to the extent and power of these games, as well as to their nature and effects. I have not observed that the American boy has become less strenuous, courageous, resolute, enduring, indifferent to pain, in connection with these sports during these years.

Football, baseball and basketball have extended from the colleges with astounding rapidity. Ninety-five per cent of all high schools in America support football teams. Baseball is about as common. Basketball is as common in the East and is rapidly becoming so in the West. No game affords better opportunity for the display and development of manly power as does football. By manly power I mean the direct and obvious qualities such as those referred to by Professor Armstrong, already quoted, that is, the ability "to punch another boy's head or to stand having his own punched in a healthy and proper manner." It is directly against, not merely the observations of those who are professionally related to physical training, but also the whole consensus of public opinion, to believe that these sports, or that football in particular, are becoming progressively ladylike. Some of us are very much more inclined to agree with President Eliot in his trenchant criticisms as to the brutality of the game as frequently played. It is true that in the teams from these secondary schools and colleges to which I have referred only a small percentage of the students are to be found. The spirit of the team, however, is something that reflects the whole spirit of the school.

If we turn now to the activities of boys outside of school we find similar facts. Jacob Riis has stated that he regarded the greatest peril of the modern city to be the street gang, composed of boys in the first instance, and later on of men, who unite their activities frequently for lawless, political and other purposes, but with great loyalty to each other, with bravery and great force. It is no answer to say that these are evil; they do show masculine qualities, even though we admit, or affirm, that they are masculine qualities showing themselves in a bad way. Crimes of violence are increasingly performed by boys in their teens. The records of our police and children's courts do not indicate that city boys lack in aggressive qualities.

In view of all these facts, it is not uninteresting to attempt to account, at least partially, for the unanimity of the judgment pronounced against us by the distinguished members of the Mosely Commission. I do not think it possible to believe that the inevitable prejudices in favor of that which obtains in one's own land should have been completely laid aside by the gentlemen visiting our institutions, which differ in such marked respects from those with which they are most familiar. It seems to me that there are earnest and honest endeavors to regard our work with not merely dispassionate, but even favorable, eyes. They were endeavoring to discover that which might be carried back to England of a useful and constructive nature. Still, such prejudice must be reckoned with, that is, suggested as an introductory fact.

The chief reason seems to be a somewhat different mode for the expression of manliness in this country from that which obtains in England, so that, looking for it where they were accustomed to see it, it was not so evident here as there. To be specific, athletic sports are an integral part of British life and of English schools in quite a different way from what they are here. A person may here come into relation with all of the official activities of one of our great city high schools without coming at all into relation with the ways in which student initiative is chiefly exhibited. The great bulk of our athletic sports are not administered by the school authorities, but are outside of them and too frequently independent. The vast congestion of such a city as New York imposes conditions upon school life that emphasize certain qualities to a degree to which they have never before been emphasized.

To give an extreme case—there is a single school in New York City, having under its roof 5,000 pupils. The conditions which would permit the boys of the school to "punch each other's heads in a healthy manner" are completely absent here. It is impossible to have a playground, where 5,000 children may play, contiguous to the school. The conduct of such a school must involve discipline and a perfection of order which is quite unnecessary and would be injurious in a small school. The mere fact of the enormous mass has altered the emphasis on social quality. What is true of the school is true of the whole city and of all of our cities. The greater the mass, the more is it necessary to minimize those elements that make for social friction. If each boy in a school of 5,000 should occasionally punch somebody's head, put tacks on the seat, throw spit balls and perform those other activities of a similar nature by which the average country school boy used to assert and develop his individuality, the whole school would be thrown into hopeless disorder.

The necessity for perfect discipline and the almost complete obliteration of individual differences, so far as the routine of the school is concerned, is well illustrated by what happens in case of a fire. Last fall, in one of the great downtown East Side schools, during the session, the fire alarm was given. It was manifestly a real call and not a drill, for the children were ordered into the street by bells which did not permit of their securing their wraps, although the weather was bad. Each class had its definite order to take; the lines formed so close that it was necessary for every individual to be in step. A single boy being out of step has been known to throw a number of pupils not only out of step, but to trip and so throw them off their feet when going down stairs rapidly. The rooms, some of them, became rapidly filled with smoke, but of all the over two thousand children in that building and the fifty teachers, not one screamed or fainted, not a single class started before its time had come, and apparently not a pupil got out of step. Every pupil in the school was on the street in less than two minutes and fifty-four seconds. This is not an exceptional case.

During the past three or four years there have been several fires in schools, any one of which might have resulted in the worst kind of panic and disaster, except for the presence of perfect discipline and self-control on the part of principal, teachers (most of whom were feminine) and pupils.

This merely illustrates in a dramatic way the necessities of a big system. Obedience and orderliness are fundamental. These are usually denominated as feminine qualities; hence, those who only see the schools when operating as such fail to see the opportunities for, or the exhibition of, the qualities of individual manliness, self-reliance and aggressiveness, which are none the less present. If the members of the Mosely Commission had only examined with more care the athletic sports and other activities where the exhibition of manliness of the type to which they refer is both feasible and desirable, I am confident that a different judgment would have been rendered.

In the discussion of this subject confusion has frequently arisen because of a failure to agree as to just what is meant by effeminacy itself. Some persons mean that the individual lacks in those qualities that are supposed to be distinctively masculine, particularly bravery, originality and power of individual initiative. Other people understand by effeminacy the acquirement by the individual of the traits that are distinctly feminine, in their origin at least, such as modesty, obedience and patience. To a casual observer there might not appear to be great difference between these two conditions. A visitor to a school who saw the boys only in the school hours might see only that the boys were orderly, obedient and patient, and he might therefore conclude that they lacked bravery, originality and initiative, whereas the facts might be exactly the reverse. I believe that I have described the case of exactly that of our English friends. They have discovered that our boys are acquiring these feminine characteristics, and they therefore conclude that they have not already acquired the distinctively masculine characteristic, because they fail to look at the boys at a time and under conditions where the display of the distinctively masculine characteristics was most feasible and desirable.

This process deserves a still larger interpretation than has as yet been given to it. The very process of civilization itself consists, to a considerable extent, in "taming the male." Men must learn to work together, to be patient and virtuous before the co-operative life of civilization is possible. It has taken ages sufficiently to tame the savage warrior so he will become the peaceful worker of modern life. He still breaks the laws of the community far more than does the woman. Thus I am profoundly of the conviction that the American boy and that the American man is steadily becoming more civilized, or effeminized; that he is acquiring the characteristics which have been especially known in connection with women, and the facts do not indicate that this acquirement of what must be for him the secondary virtues has militated against the maintenance of the superb primary virtues of manhood, of independence, resolution, aggressiveness, bravery, individuality and capacity for heroism.

A NEW FORM OF PANTOGRAPH FOR TRACING THE OUTLINES OF THE HUMAN BODY.*

W. P. BOWEN, M.S.

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This instrument consists of two pantographs mounted on a common axis. The axis, A in fig. 1, is rigidly supported on a standard, S, which is a three-inch iron pipe rising from a heavy iron base, B. The arms of each pantograph are counterpoised by weights, W, so that, although it is easily moved, it remains at rest in any position. The main arms of the pantograph, AG and GT, are 24 inches in length, and the pencil arms, HP, six inches; the instrument therefore reduces the outline to one-fourth of

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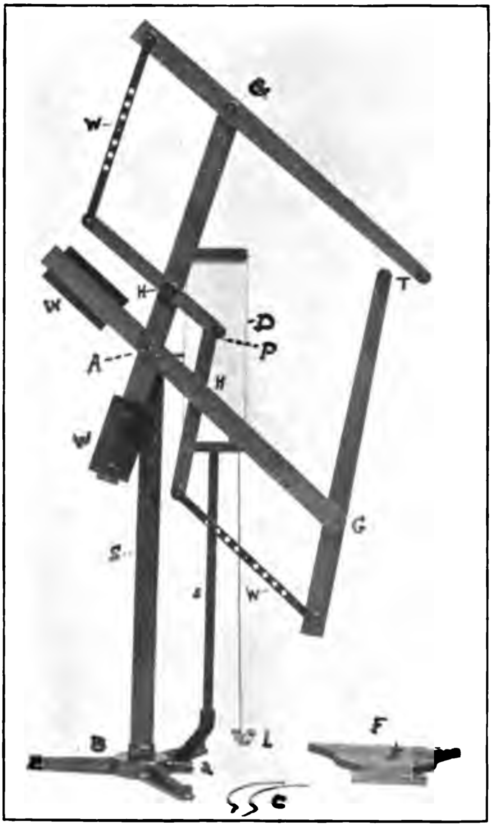
***Read before the American Society for Research in Physical Education, April, 1905 — New York.**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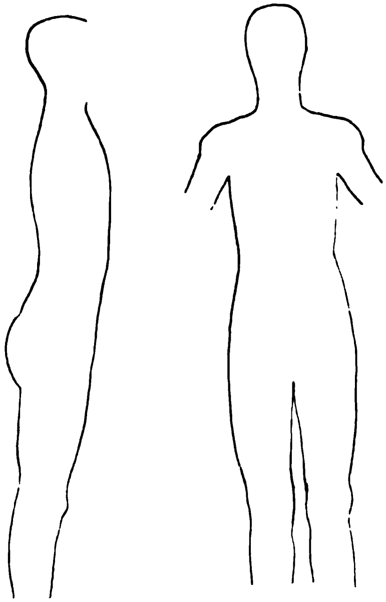

actual size. The pencils, placed at P, draw the outline on paper held upon the drawing-board D. This drawing-board is attached to a standard s, which moves on an axis, a, at its lower end. By means of a toggle-joint placed behind the drawing-board and operated by the lever, L, the examiner is able to bring the paper against the points of the pencils with a movement of his foot, leaving both hands free to operate the pantographs. The height of the board is so adjusted on its standard that the bottom of the paper corresponds to the floor on which the subject stands. The foot-board, F, is cut to indicate the positions of the subject's feet. Two tracings are taken, one (fig. 2) giving the side view and the other (fig. 3) the view from front or rear.

To operate the instrument the examiner places a blank paper in the drawing-board, places the subject in the proper position by reference to the foot-board, inserts the curved contact-rods, C, into the pantograph arms at T, places the tips of these rods against the subject's body, one at the back of the neck and the other at the front, brings paper to pencils with foot-lever, and then moves the arms of the pantograph so that the tips of the contact-rods touch the subject lightly and evenly, one following the sternum and the other the spinal column. When the subject's waist is reached, the paper is moved away from pencils, the curved contact-rods are exchanged for straight ones, and the tracing continued as shown in fig. 2. Upon completion of this tracing the subject steps aside while the examiner changes the paper on the drawing-board and turns the foot-board through one-fourth of a revolution. The tracing shown in fig. 3 is then taken, using the straight contact-rods employed in tracing the lower part of fig. 2.

The instrument is used in all regular physical examinations at the Michigan State Normal College. The advantages of its use are in part as follows:

(1) It gives a practically correct diagram, indicating posture and dimensions of the trunk. All the heights, depths, and breadths are given in much less time than that required to measure the subject with the usual instruments.

(2) The picture given is more easily comprehended by the pupils than the tables of percentile grades used in interpreting measurements.

(3) It gives what the instructor wants to know of pupils with greater accuracy than the camera, with less time and expense,

and is free from the popular objection to photography of the nude figure.

(4) By comparison with a model figure, the pantograph tracing may be made an effective aid in teaching accurately correct posture.

RECENT OBSERVATIONS IN THE ETIOLOGY, PROPHYLAXIS, AND THERAPY OF SCOLIOSIS.*

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In search for more definite etiologic factors and further pathologic conditions in scoliosis, I found it necessary to make a thorough analysis of a normal spine, the various motions which it allows, and the physiologic relations which it bears to the pelvis, ribs and various muscles acting directly or indirectly on it.

ANATOMY OF THE SPINE.—The spine is a flexuous flexible column which tapers in size from below upward, and is supported by the pelvis which acts as a broad foundation or base. In the cervical region the bodies are broader from side to side and have a tendency to limit the lateral as compared with the antero-posterior motion. Their superior and inferior surfaces are concavo-convex, and, of course, favor the motions in flexion and extension, and to a less extent from side to side, but have a tendency to limit rotation.

The articular processes in this region are oblique, and tend to permit flexion and extension and to restrict rotation; indeed, rotation cannot take place without lateral bending, the greater part of all motions of the head occurring at the occipto-atlantal and atlanto-axial articulations. All of the processes in this region, both transverse and spinous are short, which, of course, lessens the amount of leverage for rotation.

In the dorsal region the lateral and antero-posterior diameters of the bodies are about equal, their superior and inferior surfaces are flat, and have a tendency to limit flexion and extension, but favor rotation. The bodies being heart-shaped, favor oblique

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bending, especially as the apices of the heart-shaped bodies are forward. The articular processes are vertical, with the superior articular facets directed backward and outward, while the inferior look forward and inward; and this has a tendency also to limit flexion and extension, but to favor rotation. The spinous processes, being long and oblique and overlapping each other, limit extension, and, as they are close to the centre of motion, favor rotation. The transverse processes are longer and directed outward and backward in this region, which circumstances tend greatly to favor rotation and to limit flexion and extension.

In the lumbar region the bodies are very large, and their transverse are greater than their antero-posterior diameters; this limits lateral motion more than flexion and extension, and also limits rotation. Their upper and lower surfaces are broad and flat, restricting rotation. Their articular processes are vertical, and so arranged that the superior articular processes of one vertebra clasp laterally the inferior processes of the vertebra above it, making flexion and extension easy and rotation difficult. The spinous and transverse processes here are shorter than those in the dorsal region and their leverage for rotation less.

To sum up the result of this analysis, we see that the osteology in the cervical region is most conducive to flexion and extension; in the dorsal region, to rotation and lateral oblique bending, and in the lumbar region, to flexion and extension.

Now, in the dorsal region, in addition to the favorable conditions already named for rotation, and lateral oblique bending, we have a most powerful set of levers, the ribs, which, through ligamentous attachments to the bodies and transverse processes of the vertebra to the extent of one or two inches, according to the individual's size, when pulled on asymmetrically, may cause rotation and lateral oblique bending of the spinal column.

Now, while there are movable articulations between the ribs and dorsal vertebræ, their motion is limited, and when that limit is reached, they begin to act on the spine as rotators and lateral oblique benders in one-sided muscular action.

The costal cartilages being elastic and articulating with the sternum, do not limit asymmetrical positions and distortions.

The time of complete ossification of the vertebræ is not reached until the twenty-fifth or thirtieth year. The cartilaginous plates on their upper and lower surfaces do not begin to ossify until the twenty-first year, so that constant rotation and a lateral oblique bending could readily change their shape.

In the pelvis the Y-shaped cartilages between the components of the ossa innominata begin to ossify as late as the thirteenth or fourteenth year, but the ossification of the ossa innominata is not complete until the twenty-fifth year. The sacral vertebræ unite between the eighteenth and twenty-fifth years. The sacro-iliac joints and and the symphysis pubis allow more play in childhood than in adult life.

Thus it will be seen how easily the pelvis can be distorted in growing persons, if faulty attitudes and irregular ossification from ill health, trauma, etc., are brought to bear.

On examination of the spine with the ligaments intact, one can easily see that the vertebral bodies are held together on all sides by a layer of inelastic ligaments, consequently no stretching of the intervertebral discs is possible, although unequal compressions at any point may readily take place when force is exerted other than through the weight-bearing center. This inelastic ligamentous layer is reinforced to form the anterior and posterior common ligaments.

The elastic intervertebral discs of concentric vertical layers (and of heart-shape in the dorsal region) favor compression, lateral oblique bending and rotation. The ribs being long, thin and naturally twisted, can be readily distorted by a continued disturbance of the muscular equilibrium of the trunk.

Each of the muscles of the abdomen, including the external and internal oblique, transversalis and recti, has partial attachment at one end to three or more of the eight lower ribs or their cartilages and at the other end to the pelvis. The first three are partially attached to the crest of the ilium and with the recti are also partially attached to the os pubis; especially are their muscular portions attached to the iliac crest.

The external oblique, being the largest muscle of this group, having the most extensive bony attachment, which is the farthest from the center of the body and considering the direction in which it pulls, seems to be the most powerful for rotating and bending the spine. I think it never acts entirely independently of the muscles of the same or of the opposite side. This muscle is the only one of this group that is attached to the ribs proper, all of the others being attached to the costal cartilages.

(The seven lowest costal cartilages are much longer than those higher up, and thus are capable of being more greatly distorted.)

As to the muscles of the back, I think, from my study of scoliosis, that they have very little or nothing to do with the etiology of lateral curvature.

The first and second layers are to support and control the movements of the shoulders. The other layers, except the iliocostalis and quadratus lumborum, are too close to the spine to have any appreciable power as rotators or even lateral benders, and they seem to be principally for erection and extension of the spine.

PATHOLOGY.—On examining scoliotic patients, I find, in addition to the wedge-shaped vertebral bodies and contracted ligaments usually described by writers, a distortion of the pelvis, the ribs and an inequality of the muscles of the abdomen. On the side of the concavity, the ribs are straighter at the posterior angles, more acutely curved anteriorly and are directed more obliquely downward than normal, while on the side of the convexity there is the opposite condition, *e.g.*, a more acute posterior angle, a straighter anterior extremity and a more horizontal direction of the ribs.

The ilium on the side of the concavity is tilted more forward, downward and outward than normal, while on the opposite side the ilium is more vertical and its crests more horizontal.

The abdominal muscles on the side of the concavity are longer and more tense, while on the convex side these muscles are shorter and flabby. In cases of moderate degree the iliocostalis and quadratus lumborum are shorter and more tense on the convex side, and in severe cases these muscles are stronger on the concave side. In all cases the normal curves of the spine are increased.

Scudder has demonstrated that scoliotics are not up to the average in strength. This is easily explained when we analyze the existing conditions and see that the burden of supporting the trunk is thrown mostly on one set of muscles, be they partly on one side or partly on the other. This weakened condition gives rise to the marked lordosis and stoop-shoulder accompanying these cases, the deformities being the result of the effort to maintain the equilibrium.

In examining the hips of these cases, we are struck at once with the idea that one side of the pelvis is larger than the other, but as a rule they are of the same size and not on the same plane, from the fact that the crests of ilia are not parallel.

I have two means by which this tortion can be detected; first, by measurements taken thus (the trunk and hips are bared and shoes removed, the patient standing at ease with arms akimbo). 1. Between the anterior and posterior superior spinous processes of the ilium. 2. From the anterior superior spinous processes to the floor. 3. From the tip of the great trochanters to the floor. 4. From the anterior superior spinous processes to the internal malleoli. 5. Along Nelaton's line. 6. The shortest distance between crests of the ilia and the ribs on each side. Secondly, by an instrument which I devised for the purpose and here presented. The ends of the parallel arms are placed carefully on the anterior and posterior superior spinous processes of the ilium of one side at a time (holding these arms horizontally) and the pivoted arm will indicate on the arc, the inclination of the crest. The scale on the shaft on which the adjustable horizontal arm slides will give the distance between the anterior spines in front and the posterior behind, also the distance between the anterior and posterior superior spinous processes of each side.

From these measurements I have found that the distance between the anterior and the posterior superior spines are about equal on the two sides; that the anterior superior spine was from one-half to three-quarters of an inch higher on the convex side when the legs are equal in length or when the leg is longer on the side of the convexity (as measured from the floor); that the distances from the anterior superior spines to the floor are nearer equal when the leg on the side of the concavity is longer; that it is impossible to get the correct length of the leg by measuring from the anterior superior spine to the internal malleoli, for they often measure the same between these points when there is considerable actual difference as measured from the great trochanter to the floor; that the trochanters are usually on Nelaton's line, and that the ribs are closer to the crest of the ilium on the side of the convexity.

ETIOLOGY.—Guerin claimed that scoliosis was produced by the active muscular contractions on the concave side. Malgaine taught that lax ligaments and weakened muscles on the convex side formed the predisposing causes. Bernard Roth thinks that the chief factors are weakness of the spinal muscles and long-continued standing or sitting in the relaxed or stooping positions. He has observed an inherited weakness of the muscles and ligaments, associated probably with excessive softening of the bone. He writes: "Anything which weakens the muscular system tends to produce lateral curvature."

Adams believed that, in the early stages of lateral curvature, spinal muscles on both sides are, as a general rule, decidedly passive, but that as the curvature advances the muscles on the convexity are called into increased action, and serve the purpose of limiting the extent and preventing the increase of the spinal curvature.

L. A. Sayre believed that rotary lateral curvature depends entirely on spinal muscular contraction. The spinal column, he says, is held in its normal upright position by the action of the muscles situated on either side of it, and which should exactly balance each other. If for any reason one set of muscles overcomes those on the opposite sides, the spine yields and a curve is produced with its concavity toward the side on which the stronger muscles are situated. Drs. Sayre and Adams differ in placing the strong muscles on opposite sides of the body. Schreiber believes that, in early stages of scoliosis, there are changes in the muscles, the muscular changes being due to long-continued stretching and disuse.

Eulenberg holds that slight continuous muscular action is necessary for the maintenance of the upright position of the body; that this action must be equal on either side of the spine; that the most frequent cause of deviations of the spine is a disturbance of the power of the spinal muscle; that by frequently repeated passive tortion, necessary in assuming faulty positions, gradually the trunk muscles are weakened.

Lorenz sums up his opinion by the statement that anatomically, pathologically and clinically there is no foundation for the theory of a disturbed muscular antagonism, but that there is an element of general muscular weakness present in cases of lateral curvature, pure and simple, as has hitherto been assumed.

From my studies I am forced to hold the view that the distorted pelvis is the starting point of all cases (except those following paralysis, empyema, heart diseases and those accompanying Pott's disease); whether due to sitting or standing in faulty attitudes during the growing period before the bones have matured or while in a rachitic condition; unequal or irregular ossification; difference in length of the legs caused by coxalgia, coxavara, congenital dislocation of the hip, acute inflammations, flat feet, etc.; that this is immediately followed by unequal action of the muscles of the abdomen, so that those on the side, in which we find the anterior superior spine the lower, are put on the stretch, and hence act more forcibly in pulling the ribs downward, forward and straightening their angles. The ribs in turn, through their leverage on the spine, produce a dorsal concavity in it, and a rotation forward toward the same side.

On the opposite side, in which the anterior superior spine and the ribs are closer together, the abdominal muscles cannot act efficiently and the ribs become more horizontal and curved at their angles and allow the bodies of the vertebræ to rotate toward the convex side.

We are all agreed that when we are in doubt as to whether a true scoliosis exists, we direct the patient to bend forward so that we may see if rotation exists. The result of this forward bending goes to prove my point, that the unequal action of the abdominal muscles caused by the twisted pelvis produces not only the rotation but the lateral deviation as well.

PROPHYLAXIS.—Having found that the diet of scoliotic patients consist largely of carbohydrates, I would advise their exclusion as far as possible, especially candy and cake, also stimulating beverages, as coffee, tea, chocolate, soda water, etc., all of which deprive them of an appetite for food that is necessary for the growth and nourishment of their bones and muscles.

They should be taught to stand, sit and lie in correct attitude. Children should be taught to stand squarely on both feet, not to sit cross legged, or to recline in their seats, or to lie on their sides in bed. They should have proper seats at home as well as in school. Their exercises should be as symmetrical as possible and should be taken in the fresh air and sun light. Their beds should be firm, and pillows small. Examination of the legs and pelvis from time to time as per method above described, especially in rapidly growing and poorly nourished children. Should the legs be formed of unequal length, they should be made equal, mechanically or by operation according to the cause, for if allowed to remain so, distortion of the pelvis will follow. Should this condition be already present, exercises should be given for its correction. These two signs make their appearance early in scoliosis.

TREATMENT.—The rules of prophylaxis should be strictly observed in the treatment of scoliosis.

Then we should establish a treatment by gymnastic exercises, jackets made over corrected casts, forcible machine correction that will tend to overcome the distorted pelvis, stretch and strengthen the weakened and shortened abdominal muscles, which further enables us to correct the distorted ribs, stoop-shoulders, rotation and curves.

The physiological action of gymnastic exercises should be thoroughly understood and none given that will act on other muscles than those at fault or that will act as corrective force and one of the best exercises that seems to aid materially in correcting these conditions, is as follows:

The patient hangs by her hands on an oblique bar, the hand on the concave side grasping the higher end of it. She is next directed to relax the muscles of her trunk, then to flex the thigh on the convex side as strongly against the body as possible, at the same time the thigh on the side of the concavity should be extended backward and outward.

The physiological action of this exercise is explained thus:

The greater part of the weight of the body is supported by the pectoral, serati magni, the lower half of the trapezius and rhomboid muscles, especially on the concave side, and at the same time elevates the anterior ends of the most oblique ribs, making them more horizontal.

The thigh on the convex side is flexed against the body as far as possible and directed outward. This reduces the lordosis and round-shoulders and also by the contraction of the sartorius, quadriceps extensor and Tensor Vagini Femorus muscles, pull the higher anterior superior spine downward, forward and outward, which in turn stretches and strengthens the weakened abdominal muscles, which pull downward and forward the horizontal ribs and rotate the bodies of the vertebræ forward on this side and so aid in reducing the curve. As the anterior superior spine goes down the posterior goes up. The quadratus lumborum and ilio-costalis are relaxed by this uplifting of the posterior superior spine and iliac crest.

The leg on the side of the concavity is extended as far backward and outward as possible. This by contracting the Gluteus maximus, pulls downward and outward on the posterior superior spine, tends to make the iliac crests parallel, throws the anterior superior spine upward and inward relaxing the strongest and longest abdominal muscles which in turn allow the ribs to become more horizontal and relaxed.

The quadratus lumborum and ilio-costalis become stronger and shorter.

I give the following exercises similarly to accomplish the same purpose, as follows: Let the patient lie with the face downward on a table and raise and direct inward the thigh and leg on the concave side, having the arms at her sides. Another is to let the patient lie on her back on the floor or table and have a stool or some support that will raise the leg on the convex side to about 55′ or 60′ and then direct them to flex the thigh gradually as far as possible with the knee extended. Each of these exercises should be repeated as often as possible. It is not the variety of exercise that these patients get that tends to cure them, but the well directed few often repeated.

I wish to present some photographs of my forcible correction machine, which I have called the scoliotone. This consists of two padded adjustable tressels, on which the upper thorax and pelvis are supported, with the legs at right angles to the body. By these means we, in a degree, overcome the lordosis and round-shoulders. On one end of each tressle is a padded upright, which causes counter-pressure against the axilla and the pelvis when the weights are applied. A strap armed with hooks to hold the weights passes over the convexity, being made fast to the machine on the side of the concavity of the curve. This attachment of the strap to the machine is so accomplished by the hooks that it may be adjusted by sliding along on a rod, so as to pull against the greatest angle of the deformity; and in addition, the rod to which it is attached may be lowered or raised, depending on whether we desire to act more on the rotation or curve.

This machine differs from Beely's in that it has fixed supports for the thorax and pelvis, while in his machine the patient rests on the feet and elbows.

This machine may be attached to the ordinary rib-stool,—or may have a quadrangular frame of gas pipe to support it. The weights are lifted by a lever, and the amount of weight varies according to the tolerance or resistance met in individual cases. Patients can remain in this machine for a more prolonged period than in the majority of corrective appliances, and for the past two or three years I have found it a most helpful aid in the treatment of this class of cases. It overcomes lordosis, straightens the spine antero-posteriorly from end to end, strengthens the abdominal muscles, and by means of the weighted straps tends to overcome the rotation and lateral deviation.

During the intervals between the hours of exercising these patients should wear plaster jackets made over corrected casts, so as to retain the correction that is being gained by the exercises and forcible machine correction.

The jackets are made over corrected casts. The casts should be corrected so that the median line of the trunk will be vertical to the middle of the transverse plane of the pelvis. There should be a slight reversed rotation of the trunk of the cast also, in order to get constant pressure on the abnormal convexities and allow space for the abnormal concavities, thus giving it a corrective power, and we maintain the same circumferential measurements of the casts after, as before correction. This will aid in maintaining what we gain by exercises and forcible machine correction. I use my modified "T" square to determine the plane of the pelvis and vertical median line of the body which by this instrument can be determined at a point equidistant from the two anterior superior spines. In obtaining the mold of the body in cases of scoliosis, one should always have the patient in a sitting posture to obliterate the lordosis and thereby diminish the kyphosis and rotation.

It is needless to say that careful measurements should be made of the patient at this time, both in circumference and the distance between mammæ, from busts to anterior superior spines, and from corresponding points on the crests of ilia to the forward slope of the shoulders.

THE MENTAL QUALIFICATIONS OF CANDIDATES FOR ADMISSION TO NORMAL SCHOOLS OF PHYSICAL TRAINING.*

BARONESS ROSE POSSE.

Boston.

Brain has been called the flower of body. If physical exercise be arranged according to correct physiological laws, general health will ensue, the functional activities will be heightened and by the consequent nourishment of brain tissue the perfected flower will be produced.

Persons who practise physical training through a protracted period will become possessed of a highly developed neuro-motor apparatus, with a consequent increase of mental power. This is noticeably true of graduates of gymnastics but the effects of the training are more conspicuously apparent in the physique, for, while the physical man can be greatly changed in two years' time, mental education comes gradually.

"Physical training is less an education towards producing force, than for producing ability to govern the force already present. It is a training of volition and attention in their relation to the organs of locomotion, so as to produce an intimate connection between mind and muscle. And since the health of the nervous tissue depends upon its blood supply, gymnastics form a powerful means by which we may increase the nutrition and waste of brain and nerve."

While, for public school children and others who take regular exercise, this is a consummation devoutly to be wished, we must not allow ourselves to be influenced by it to the extent of considering it a sufficient means for correcting deficiency of intellect in candidates for admission to normal schools of physical training. It is wiser to start with pupils already possessed of good mental ability, than to trust to the development through exercise of their latent powers.

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If the choice lies between a candidate of good mental ability and one of good physical ability, the selection may well go to the former, provided the candidate has no functional disorder. The superiority of the pupil of acute mental activity is seen in every form of physical work. The expression "He uses his head" is often applicable in the gymnasium. Take, for instance, a game of basketball. It will be noticed that quickness of perception and control of nerve will outwit and outclass mere physical strength. In the performance of a difficult gymnastic movement, the concentration possible to the acute brain will determine just the right amount of force, the just amount of speed for accomplishing the desired result.

On the other hand, persons capable of great gymnastic skill are possessed of unusual brain power. They may not possess culture in its common acceptation, but they have the *power* of thought. This power but needs to be rightly developed to produce a person distinguished above his fellows.

In the short time allotted to the training of teachers in the sciences essential to a proper understanding of the care of the human body, there is little opportunity for elementary or preparatory work. The time has passed when anyone who is a lover of physical exercise may be considered eligible to enter a normal school of gymnastics. It has been the experience of most schools of this kind to have many applicants who have been encouraged by their friends to enter solely because of their cleverness in feats of strength and because they liked physical work better than any form of mental work. Because of their special aptitude for acrobatics they believed that the physical training course would allow them to perfect their skill in this direction without burdening them with irksome mental tasks for which they had little inclination. When such students have encountered the difficulties attending the accomplishment of the prescribed course, they have usually succumbed before the end of the first year. Yet in almost every case, they have proved notable athletes, showing that they possessed the necessary brain power to conquer mental problems, but either their previous training was too defective to give them the proper start, or their ambition was not sufficient to compel them to do the work necessary to attain the standard set for the class.

Since the position of director of physical training offers unusual opportunities for what may be rightly termed malpractice, it is essential that the prospective teacher should be endowed with sufficient brains to ensure good judgment and intelligent treatment of his charges.

It is exceptional for a teacher to meet classes composed of perfectly normal types. The gymnasium is properly considered a therapeutic agent. Ailing persons are advised to take gymnastics for their physical benefit, and it is seldom possible that the gymnasium director can divide the class into two divisions, one for the strong pupils and one for the weak ones, so the director's ingenuity is constantly taxed to provide just the right amount of exercise for each individual case.

A competent teacher should know how to direct simultaneously the movements of a large number of persons, and yet give a certain amount of special exercise wherever needed. He must know how to handle the stolid, the hysterical, the over-ambitious, the listless and the anemic. Just the amount of work to give these varying types—just the right dose of exercise—requires tact and quick perceptions, as well as theoretical knowledge.

The physical trainer shares with the family physician the responsibility of maintaining the health of his charges, but, whereas the physician confronts an existing condition, the trainer is dealing with possibilities, and he cannot allow his vigilance to relax for a moment, lest by some inadvertence, the very means he is using to promote health shall produce disease in an otherwise healthy subject.

Granting that a candidate for a normal school of physical training should be possessed of a certain amount of mental ability, let us consider what special needs are to be met.

The pupil in a normal school of physical training must have a good memory and a logical mind. He must be original, not imitative. Imitation may be the sincerest flattery but it is not always good policy in a teacher of gymnastics. The kind of work such a teacher is called upon to do requires that he put into it the fire of his own individuality, and the greater his ingenuity, the better his results. Moreover, the pupil must be able to grasp the perspective of his two or three years' course, as the case may be, and he must have the versatility, the adaptability, to co-ordinate his instruction with reference to the ultimate result. He must make all the different points bear on the centre. He must have qualities of leadership. He must have interest in study. He must possess energy and enthusiasm. He must have a good moral character and good manners.

Let us consider also what preparatory studies are most essential to the proper understanding of the work of a normal school of physical training.

The branches that will form the best foundation for such a course are English, Latin or Greek, Mathematics, Physics and Chemistry. As a practical test, this question was put to a class in the Posse Gymnasium. "What preliminary studies have been of the most assistance to you in your work here?" The answer was unanimous in favor of Chemistry, Physics and Latin. One student suggested that a fitting preliminary would be a course in logic or concentration of thought, showing that the students realize their lack of reasoning power. Among the sciences that tend to develop the reasoning power may be mentioned incidentally, Mathematics, Psychology, and analytical study of the languages. Women are noticeably deficient in the reasoning power that seems to be a common characteristic of men.

Of the branches named, English is conceded to be a *sine qua non* for any profession, and since the city examinations for teachers of gymnastics make a separate paragraph to the effect that, in written and oral answers to questions, applicants must give evidence of ability to use the English language correctly, we need not discuss the advisability of a good working knowledge of this subject. Latin and Greek are particularly helpful in the study of Anatomy and Physiology. Physics and Chemistry are necessary for the proper understanding of Physiology, Hygiene and Kinesiology. The study of Mathematics lays the foundation for logical thinking, and is especially useful in solving the problems of Kinesiology.

Entrance examinations to colleges and institutions of higher learning are given to restrict the attendance to those possessing good mental ability. The requirements of the leading medical colleges include a college diploma, those of second grade require an examination in Botany, Latin, Chemistry and Physics. English is an absolute essential.

The requirements for admission to the Harvard Medical School state that candidates must present a degree from a recognized college or scientific school, with the exception of such persons of suitable age and attainments as may be admitted by a special vote of the Administrative Board in each case. The exception applies only to men who have practically finished a required course for a degree but for some reason prefer waiting until a later period for graduation; or to men who without such a degree, have acquired an equivalent education and training sufficient to enable them to profit by the instruction offered in the school.

Since the Harvard Medical School made this rule to admit only college graduates, there has been a very noticeable falling off in attendance, with a corresponding rise in the standard of work. The minor medical schools have profited largely by the situation. If Harvard desired to reduce its numbers, the measure has proved effectual, and there is a rumor that the school will soon return to its former plan of admitting all who pass its examinations without reference to the possession of a degree.

For admission to colleges the requirements throughout the country are nearly uniform.

In 1899, a representative Committee of College Entrance Requirements was appointed by the National Education Asociation to study the question of such requirements, in order that both the preparatory school and the college should be benefited thereby. The plan submitted by this committee has been accepted by most of the colleges. The requirements may be met by certificate from what are termed "accredited high schools" or by examination. The examination is sometimes given at the college itself, or at some large city, where it is conducted by the College Entrance Examination Board for that section.

Something more than ten years ago, educators became convinced that college courses ought to be so adjusted that every pupil at the end of a secondary course recognized as excellent both in the quality and the quantity of its work, should be admitted without question "into an atmosphere of deeper research and higher culture along the lines of the mental aptitudes."

Since that time more than one hundred colleges and universities in the United States have entered into a personal alliance with from ten to more than a hundred high schools each. The state universities have been foremost among the higher institutions in this movement, and the public high schools make up the large majority of what are called "accredited schools." The University of Michigan, for instance, has a list of two hundred formally accredited schools. Preparatory schools, other than public high schools, must have a very high standing to be placed upon the list. Pupils receiving diplomas from any of these schools have been admitted to the colleges without examination.

The present appears to be an auspicious time for the discussion of some uniform method of gauging the mental ability of applicants for admission to normal schools of physical training. The mere fact of the candidate's possessing a diploma from a High School is no criterion that he will have the mental calibre to conquer the difficulties of this special work. The studies to be pursued are abstract scientific, not easily understood without the preparation furnished by a college course. At present, the number of applications from college graduates is not sufficient to warrant restricting the attendance to this grade of students.

To determine the fitness of students, we must know more than can be learned from a single interview.

An examination may or may not be an advantage. An examination is a test of accuracy, of memory, of the power of concentration. A writer on this subject says that a written examination shows the massiveness or robustness of the brain, or what may be called the energy of the mind. "We can see that knowledge has been acquired and know that brain work has been done to get it, and, in addition, we may note indications of strength or feebleness of will."

Another writer says that the candidate who is dumb in the presence of a problem demanding solution, who lacks the power of expressing himself definitely and accurately, must in some degree be unfitted for the work he has undertaken.

On the other hand, a person may be able to repeat the thoughts of others, and thus present a most creditable showing in an examination, whereas, if required to do something requiring originality of thought, be might be absolutely undone. To be a teacher of physical training requires special gifts, and a promising pupil may often become conscious that he is quite out of his sphere, after he has had opportunities to find out the spirit and aim of this particular line of work.

Thus an examination may not always be productive of satisfactory results. Moreover, it is my belief that an examination will reveal very little more than may be gained from a correspondence followed by several personal interviews.

There is one requirement which could be profitably exacted, which would present a fair idea of the taste, the opinions, and the general education of the applicant, *i.e.,* a written theme of not less than one page or more than three, which should be written at the time of application on a subject chosen by the examiner.

More than any artificial qualifications in a teacher of gymnastics must be reckoned a large outlook on life, derived from a breadth and depth of character. This kind of wisdom must come from within, and is not dependent on book-learning.

The work of the normal school of gymnastics should be of approximately the same grade as that of the medical schools. The few subjects taught should be mastered. For the accomplishment of this course a more than average mental ability is required. It is not absolutely essential that the pupil should be possessed of exceptional physical strength, neither need she rival the proportions of the ever-lovely Venus de Milo to gain admission. Many faults of proportion and most deficiencies of physique may be remedied by gymnastic practice. Indeed, a gymnasium that cannot correct faults and cure slight abnormalities is of little practical value.

It has been proved that physical training improves cerebration, but the science has not yet reached that stage of perfection where it can *make* brains. The prospective teacher must have mental ability and that above the average, to meet the increasing demand on teachers in this profession.

Now is the accepted time when all the world turns to sports. The movement has become so all-absorbing, that a disaffected professor was lately heard to remark that it was "a good thing gone mad." But the enthusiasm is infectious. In every city and town in the country the youth are making their school life a mixture of study and play, and with this popular trend in all educational institutions, gymnastics must eventually take its proper place as the preliminary training that wins the battle. The schools that have regular gymnastic exercise are the ones that turn out the best athletes. So, though we have started at the wrong end—first sports and then gymnastics—we shall doubtless arrive presently at the proper adjustment.

The profession of physical training offers today opportunities worthy of men and women of brain and skill. The placing of a high standard for teachers of gymnastics is altogether desirable.

Before the establishment of normal schools of physical training, the mental qualifications of most physical trainers were of an inferior character. The impression of that old-time instructor has been hard to eradicate.

But now, at last, comes the demand for educated teachers, for men and women who can command as high a salary as the principal of a high school, or the head of a college department. If the times demand such a teacher, the times will produce him.

METHOD OF INTRODUCING ELEMENTARY DANCING STEPS.*

C. WARD CRAMPTON, M.D.

(1) Foot displacing (rocking step, foot rocking, etc.).

First Method. Indirect through heel raising and foot rocking.

(1) Run in place.
(2) Alternate heel raising—knee coming well forward, the weight lifted at each count.
(3) Position changed, toes turned well out, right foot crossed in front of left.

In this position. (a) Alternate heel raising, knees coming to the side.
(b) The same, lifting the whole foot from the floor.
(c) The same, gradually allowing the feet to displace each other, with a forward and backward movement.

Second Method. Indirect, through lateral rocking.

The right foot is raised sideways, on the word, *change,* the position is reversed to the left. After several changes on order, the movement can be done on count and lateral foot displacing established. This is a natural movement and even the most deficient can do it the first time, whereas the forward rocking movement is less natural and is much more difficult to acquire. With lateral foot displacing established, the direction is given to let one foot gradually come forward. Thus oblique and forward foot displacing may be obtained.

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* **Presented at the Convention of the American Physical Education Association, April 19, 1905.**

Third Method. Direct.

This is taught in a similar manner to the teaching of the lateral rocking. The right foot is started from the forward stretch position. It is not a good method. (The movement may also be well taught through forward and backward swaying.)

(2) *The Balance Step.* (Jump and swing.)

Indirect Method.

(1) Hop twice on each foot, raising the free foot upward and backward.
(2) Continue hopping, raising the free foot to the side.
(3) Continue hopping, crossing the free foot from the side "around in front."

This gives the required movement at a somewhat rapid tempo, which can be subsequently modified. It is unusual to find a boy in the first term High School who does not get the movement the first time it is presented in this way.

REPORTS OF THE COUNCIL.

NATIONAL COUNCIL, JUNE 3, 1905.

Present: Drs. Gulick, Arnold, Mulliner, Meylan and Mr. Prentiss.

The Secretary read the following report:

Financial Report of Secretary's Office for May, 1905.

Receipts.	
Dues	$ 47 50
Subscriptions	9 20
Back numbers and reprints	3 35
Cash Balance April 30th,	223 46
	$283 51

Expenditures.	
Messenger and Ribbon (Convention)	$ 1 33
Express on Reviews to Eng.	1 00
To Emanuel Haug, Treas.	130 00
List of Y. M. C. A. direct.	25
Rebates to local societies	35 00
Credited to Pub. Fund	17 80
Postage	3 98
Clerical help account	33 33
Cash balance, May 31st,	60 82
	$283 51

The Secretary's Report was accepted.

The Secretary reported the returns of the mail vote as follows: On the selection of headquarters of the Council for the next two years, seven voted for New York, two for Philadelphia, one for Boston, and one for Springfield. Another member voted for Philadelphia, conditionally, giving New York as second choice; one member declined to vote; and four members did not answer. The majority of votes cast having been given for New York, the President declared that New York would be the headquarters of the Council for the next two years.

On the matter of affiliating the Pacific Northwest and Rhode Island Societies, 13 members voted in favor of affiliation and none against. The President declared these two societies affiliated.

It was voted that the Secretary be instructed to send out a mail vote as soon as possible on the election of two additional members to serve on the Executive Committee in New York.

It was voted that the Secretary be instructed to send a list of members in New York who have been active in the local society, as a suggestion to council members who live far away and are not acquainted with the New York members. The Council named five members to constitute this list.

The Secretary read a communication from the Friedenker Publishing Company asking the Association to send printed matter for distribution at the Turnfest in Indianapolis.

It was voted that the Secretary be instructed to have a suitable sign made and sent to Indianapolis, giving information concerning the Association and the REVIEW.

The following persons were elected to membership in the Association:

Margaret Barrett, 1302 Atlantic Street, Brooklyn, N. Y.
Helen M. McKinstry, 1331 E. 14th Ave., Denver, Colo.
Lee F. Hanmer, 2441 7th Ave., New York, N. Y.
Ruth Nottage, 34 Wyman St., West Medford, Mass.
Mary W. Hinman, 179 53d St., Chicago, Ill.
Seraphine C. Fowler, 67 W. 92d Street, New York, N. Y.
Mary Sutton Macy, M.D., 101 W. 80th St., New York, N. Y.
Flora M. Ogston, Cameron Street, Dunfermlene, Scotland.
Ethel M. Bland, Waterbury, Conn.

The meeting adjourned.

GEORGE L. MEYLAN,
Secretary.

NORMAL SCHOOL SECTION.

SECTION ON NORMAL SCHOOLS OF PHYSICAL TRAINING.

Meeting held Tuesday April 18th, 1905, at Teachers' College, Columbia University, New York. Chairman, E. H. Arnold, M.D., Director New Haven Normal School of Gymnastics.

The following Normal Schools were represented: Boston Normal School of Gymnastics; Columbia University, Teachers' College, Physical Training course; New Haven Normal School of Gymnastics; New York School of Gymnastics; North American Gymnastic Union, Normal School at Milwaukee; Posse Normal School of Gymnastics; Sargent Normal School of Gymnastics; Temple College, Philadelphia Normal School of Gymnastics.

The following qualifications were adopted as representing in the opinion of those assembled the minimum requirements for admission to a normal school of gymnastics.

(*a*) *Mental qualifications:*

1. Graduation from a public high school having a four years' graded course of instruction, the fact of such graduation to be proved by submitting the original diploma and a certificate of standing in the studies of the senior year signed by the principal of the school issuing the diploma.
2. The equivalent of a high school education. This equivalent is to be established by an examination conducted by the principal of a high school of above description.

(*b*) *Physical qualifications:*

1. Age: men from twenty to thirty-five years, women from eighteen to forty years.
2. Stature, neither too great excess over nor too great deficiency below the average height of either sex is desirable.
3. Health: good health to be required and proved by a physical examination such as imposed by high class life insurance companies.
4. Deformity or serious physical defect should not be present.

(*c*) *Moral qualifications:*

Moral fitness for the calling of a teacher of physical education is to be established by the testimonial of at least two people of recognized standing in the community of the applicant. These must not be relatives of the candidate.

(*d*) *Gymnastic qualifications:*

A fair gymnastic or athletic proficiency is necessary.

(*e*) Each candidate shall be subject to a probation of one month as a further proof that he possesses all the above requirements. Neither candidate nor school is during this period of probation to assume any financial or other obligations to the other party.

EDITORIAL NOTE AND COMMENT.

The action of the Y. M. C. A. Directors at their recent meeting in Buffalo in inviting the "unsparing" criticism of their work from competent outsiders is a long step in the right direction. They have gone far beyond the N. A. Turnerbund in that they have exposed all their methods of work to such criticism instead of only a portion, as in a contest or an exhibition. The only difficulty in such an attempt is to get perfectly frank criticism rather than laudatory commendation.

The rapid growth of the organization and the effective work it has done with and for men during their formative period give ample opportunity for the highest degree of self complacency on the part of the pioneers who made it all possible.

That the directors realize the possible dangers of intensive inbreeding and the narrowing possibilities of a close organization and desire to eliminate such influences by inviting the broadest, keenest outside criticism, is even more a matter for congratulation than is the great and well deserved success they have already achieved.

The fight against the "great white plague" which is developing so rapidly throughout the civilized world is divided into three distinct movements, one directed toward the cure of early cases by fresh air and good food, another toward the elimination of unfavorable conditions, as bad ventilation and lighting in homes, schools, shops, factories, etc., and a third toward the general development of individual resistance to tuberculosis so that it cannot get a foothold in the system.

Teachers of physical training are in a position of peculiarly great responsibility toward the community in that their work is so closely related to the development and preservation of health and of constitutional resistance and the teaching of personal hygiene that they should be preëminently interested in discovering ways to make their influence felt in the struggle against tuberculosis.

It is strange that bad ventilation, which has so large a share in aiding the onset of the disease, has not been convicted and subjected to a more vigorous attack ere this. The fresh air cure is needed mainly because of previous bad air poisoning, hence the necessity for the good air gospel to be preached in school and out of school endlessly.

Let the preaching be of the practical sort which will enable the hearers to discover whether or no they are actually living in good or bad air, and if in bad, how they may make it good.

Fortunately one of the most perfect tests for bad air (bad from poisonous human exhalation) is so easily and so commonly applied that it has not received the confidence that it deserves. If the air of a room is offensive in the slightest degree to the nose of a person coming into the room from the fresh outside air, the air contains enough of poison to make it injurious to all of the occupants of the room. This test can be absolutely relied upon and is as good and as scientific as a chemical determination of the CO2 content, especially as it is a more direct measure of the real poison in the rebreathed air.

NEWS NOTES.

The Executive Committee of the North American Turnerbund has appointed two Committees on Observation to serve at the Twenty-ninth National Gymnastic Festival, held in Indianapolis June 21-25. One consists of the following five members of the Turnerbund, who are graduates from its Normal School of Gymnastics and are now, or have been, employed as teachers of gymnastics in its societies: Dr. Karl Zapp, of Cleveland; Mr. Alvin E. Kindervater, of St. Louis; Mr. Richard Pertuch, of Philadelphia; Dr. Henry Hartung, of Chicago; and Mr. George Wittich, of Milwaukee. The other committee, composed of persons outside the Turnerbund, includes Captain H. J. Koehler, of West Point; Gen. F. Shaler, of Indianapolis; Supt. C. N. Kendall, of the Indianapolis Public Schools; Supt. E. G. Cooley, of the Chicago Public Schools; Pres. W. E. Stone, of Purdue University; and Dr. F. E. Leonard, of Oberlin College.

ABSTRACTS.

WEATHER INFLUENCES, E. G. Dexter (New York: The MacMillan Company, 1904, pp. XXXI+286, figs. 52).—This book discusses sources and nature of weather proverbs, the weather lore of the "skyey influences," animal weather lore, weather influences in literature, the empirical problem, the meteorological conditions, the child and the weather, crime and the weather, suicide and the weather, drunkenness and the weather, attention and the weather, and a summary of weather effects. A bibliography of the subject is included. Exper. Stat. Record.

THE HUMIDITY OF THE AIR IN OUR HOMES, H. F. Bishop (Engineer. News, 52 (1904), No. II, pp. 234-236, figs. 2).—This question is somewhat fully discussed, the author stating in conclusion his belief "that a humidity of 30 to 50 per cent., depending upon outside conditions, can be readily maintained, will be found sufficient for comfort, and conducive to the best health. Exper. Stat. Record.

AIR, WATER AND FOOD FROM A SANITARY STANDPOINT, Ellen H. Richards and A. G. Woodman (New York): John Wiley & Sons; London: Chapman & Hall, Ltd., 1904, 2 ed., pp. 262, figs. 13, map I).—The authors state that in preparing the second edition of this useful textbook, the chapters on analytical methods have been considerably enlarged with a view to making the work more adapted to the needs of chemical and sanitary engineers, as well as to general students and house-holders. The bibliographical data, which is a feature of the book, has also been revised and extended. Exper. Stat. Record.

Dr. R. A. Fleming read a paper on Massage, Passive Movements and Modified Resisted Exercises in the Treatment of Advanced Cardiac Dilatation, in which rest and cardiac tonics had failed to yield further benefit. He thought that the exercises gave tone to the heart where it was possible for the myocardium to respond at all and they probably did so by dilating the vessels and relieving the over-burdened heart. Careful percussion of the cardiac right and left borders, taken along with the position of the apex beat yielded accurate data as to the contraction of a dilated heart. The method of treatment consisted of successive periods of daily massage, followed from seven or ten days later by passive movements of the arms and legs and after other seven to ten days by resisted exercises. The patient was not allowed out of bed during the period of from 21 to 30 days and the exercises were limited, therefore, to those which could be performed in bed. Clinical details were given of ten cases, two of which were cases of aortic and mitral incompetence and in neither of these two was the treatment successful. In the remaining eight cases success followed the treatment, the patients were allowed up after the period of resisted exercises was finished and were made to walk slowly for a few minutes, and the period of active exercise thus taken was gradually lengthened day by day. One of the eight patients speedily relapsed but with six the results were extremely satisfactory. Periods varying from two years to six months have elapsed since treatment was stopped and all the six retain the degree of improvement gained.—Dr. G. A. Gibson said that resisted movement was in reality Ling's method. The value of massage could not be over-estimated and Ling's exercises did marvelous good and increased the field of cardiac response.—Dr. William Russel thought that the term "apex beat" was most unfortunate because the presumption was that it was caused by the left ventricle. The "apex beat" was not caused by the true apex of the heart in the cases referred to so that the only safe guide as to the size of the heart was percussion. Lancet. (Edinburgh Medico-Chirurgical Society.)

AIR, FOOD, AND EXERCISE IN THE PREVENTION OF TUBERCULOSIS. —Ybarra quotes Koch, who insists upon the importance of the prevention of tuberculosis and of teaching the public how to avoid the disease. He affirms that pulmonary tuberculosis is invariably a disease which is related to a disturbance of the digestive function. One who habitually lives under debilitating conditions as regards air, food, and bodily exercise is liable to be attacked at any period of his life by this disease, though there may not be in his constitution the slightest trace of hereditary tendency thereto. The two objects to be held constantly in view in the prevention of this disease are: 1. To cultivate invulnerability of the organism. 2. To destroy or suppress the bacillus. For the first of these there must be plenty of pure air, sunlight, nutritious food, physical exercise, proper clothing, hygienic surroundings, and a steady, methodical, moral life. For the second, there must be abundance of fresh, pure air, siperalimentation, gradually increased bodily exercise, recreation, and everything that makes life agreeable. Medicine.

PHYSICAL TRAINING AND SWEDISH METHODS. We publish elsewhere a letter of explanation from Sir Lauder Brunton with regard to the part which he took in the "conference" convened by the Bishop of Bristol and Miss Theodore Johnson, as reported in our columns last week, p. 1428. Sir Lauder Brunton professes to complete the report which we published, but we are unable to see that he adds any important fact. We have carefully compared our report with those published in the Times and other leading daily papers, and they agree with ours in all essential respects. The fact is that, as indicated in our editorial reference, it was a very curious sort of conference, and the impression apparently carried away makes it more remarkable still. Sir Lauder Brunton tells us that the proposal before the conference was a project to establish (1) a school for teaching physical exercises in London; (2) a central institute to co-ordinate the teaching in all such schools throughout the country, and to grant certificates. As a matter of fact, the resolution proposed by Sir William Church, and actually seconded by Sir Lauder Brunton, contained no reference to schools or to a central institute, but merely affirmed the advisability of establishing in the United Kingdom a system of physical education, and constituted the invited guests an association to press proposals to that effect on the Government, the public, and public bodies. We desire to repeat our protest against the assumption that the presence of certain medical men at this conference, and the fact that a colorless resolution was moved and seconded by two of them, in any way commits the medical profession as a body to a scheme the details of which were deliberately withheld from the meeting. This protest seems to be the more necessary, because some of our contemporaries in the daily press appeared rather disposed to accept Miss Theodora Johnson at her own valuation, and to fail to appreciate the modification introduced before it was proposed into the resolution drafted by the promoters of the meeting. Brit. Med. Jour.

THE NUTRITIVE VALUE OF MEAT EXTRACT, E. Bürgi (Arch. Hyg., 51 (1904), No. 1, pp. 1-18).—The experiments reported have to do with the controversial question whether or not meat extract increases metabolism. The conclusion is drawn that the material taken in this form is rapidly excreted and that the extract bodies are not foods. The rate of excretion was noted, and it was observed that there was some variation in the rapidity with which the nitrogen and carbon in the meat extract consumed were eliminated. Exper. Stat. Record.

THE BEHAVIOR OF MEAT EXTRACTS IN THE ANIMAL BODY, M. Rubner (Arch. Hyg., 51 (1904), No. 1, pp. 19-61).—An exhaustive discussion of the subject, some of the author's investigations being reported. The author concluded that the meat extractives after they have served their purpose for stimulating digestion are excreted as soon as may be from the body. Exper. Stat. Record.

METABOLISM IN OLD AGE, S. Fenger (Skand. Arch. Physiol., 16 (1904), No. 3-4, pp. 222-248).—The author studied the diet and metabolism of nitrogen of an individual at intervals during a period of about 15 years, the subject being a woman 61 years old at the beginning of the experimental period.

From choice the diet was very simple, consisting of such foods as egg, oatmeal, soup, skim milk, sugar, fruit and a little wine. The protein consumed per kilogram of body weight was not far from 2 gm., the energy value being about 26.4 calories. Notwithstanding these low values, the subject remained in good health. A number of experiments on the effect of varying amounts of protein and energy were carried on.

The author concluded that age (75 years) did not hinder the organism from very promptly making good a loss of nitrogen when a more abundant diet followed a period characterized by a limited supply. He points out that for 15 years no salt was eaten except that naturally present in the food, and that the amount taken daily was only about 1.5 gm., of which about half was excreted in the feces and the remainder in the urine. This he believes shows that the minimum requirement is lower than has been supposed, at least in old age.

It was, of course, impossible to say whether or not the subject would have been in a better condition on another diet, but the author considers it fair to conclude that a diet may be considered suitable to old age which contains protein enough to supply the body demands and maintains the person in health throughout long periods, requirements which the present diet evidently met. Exper. Stat. Record.

FATIGUE ANTITOXINE is said to be obtained by injecting into horses a specific toxine obtained from muscles of animals which have been worked to death. W. Weichardt's own account of his discovery, as translated from the Deutsche medizinische Wochenschrift, is as follows: "The author pulled guinea pigs back and forth over rough ground until they were very tired and there came a sinking of the bodily temperature. Under careful antiseptic precautions I obtained some muscular plasma, which, as compared with the normal flesh, tasted bitter, and was reddish in color. Animals into which it was injected in any quantity died promptly. I secured some of the dialysable matter of the residue, which contained a toxine, which in a few weeks became absolutely dry, and at low temperature remained active. Injected into animals it produced an antitoxine. Consumption (verfutterung) of this antitoxine produces a species of immunity against weariness. Contrary to the toxine, the antitoxine is dialysable, and therefore easy to obtain." New York Med. Jour.

SPONTANEOUS TETANUS AS INFLUENCED BY HEAT, H. Vincent (Ann. Inst. Pasteur, 18 (1904), No. 7, pp. 450-464).—The author discusses in a critical manner the question concerning the existence of spontaneous species of tetanus in animals. The influence of heat upon the development of tetanus was studied in an experiment with guinea pigs.

The subjection of these animals to high degrees of temperature was found to cause numerical modifications in the leucocytes, changes in the relative proportions of different kinds of leucocytes, and histological alterations in the structure of the leucocytes. In animals which were maintained at temperatures of 42°.5 and 43° C. the phagocytes were dissolved to considerable extent and this reduction in the number of leucocytes is considered as having bearing on the reduced resisting power of such animals toward tetanus bacillus and other pathogenic organisms. Exper. Stat. Record.

TEMPERATURE AND INDOOR HUMIDITY.—The Bulletin of Chicago's Health Department, says: Recently, Dr. Henry Mitchell Smith, of Brooklyn, read before the Brooklyn Medical Society a paper on "Indoor Humidity," which embodies the results of his years of study and of observation of the baleful effects of an overheated and overdry indoor atmosphere upon health. "The neglect of the element of watery vapor in the air is the greatest cause of overheating our homes. A low humidity is the great cause of discomfort, the source of much ill-health, catarrhs, colds, and other diseases of the skin, mucous membranes, etc.," Tests conclusively proved that a percentage of moisture above 50, with a temperature of about 65°, yields the greatest comfort and the best conditions for health. With a temperature of 72° or 74° and a relative humidity of 30%, as compared with a room at 65° to 68° and a relative humidity of about 60%, the latter seemed the warmer and more comfortable. Add to this the fact, pointed out by Professor Wilson, of Milwaukee, in a paper on "Atmospheric Moisture and Artificial Heating," and it will be seen that we are wasting fuel from the unnecessarily high temperature we maintain. The waste is probably greater than is generally supposed. Professor Wilson says: "About 25% of the cost of heating is expended in raising the temperature from 60° to 70°, so if we can keep comfortable at a temperature of 65° we shall have saved at least 12 1-2% of the total cost of heating." Abstr. American Medicine.

PHYSIOLOGIC ACTION OF ETHYL ALCOHOL CONSIDERED AS FOOD.—W. H. Goddard* carried out an extensive series of experiments on dogs, to determine the food value of alcohol. The series was carried out with three groups of animals, these separated according to the amount of alcohol used. He observed from these experiments that when alcohol to the amount of 1-750 part of the body-weight of the animal was administered, a little more than 5% of that amount was excreted; and since no aldehyd or other alcohol derivatives were found in the expired air, in the urine, in the blood, or in any part of the animal after death he concludes that the remainder—nearly 95% —was made use of as food. When double the quantity of alcohol used above was employed, he found that a little more than 6% was excreted, and here for the first time acetic aldehyd made its appearance in the expired air. When very large doses of alcohol were employed, about 50% of the alcohol, or its equivalent, was excreted. Thus it was observed that about half the alcohol so administered was not utilized in the body in any way. The compounds formed from the alcohol were aldehyd, alkaline acetates, alkaline carbonates, and probably carbon dioxid, and water. Other carbon compounds probably existed. This series of experiments thus indicates that alcohol in small doses is undoubtedly a food; but in large doses 50% is excreted, and it is not a food in the proper sense of that term, and in still larger doses it is probable, says the author, that a still higher percentage is excreted. Abstr. Medical News.

EFFECTS OF ENFORCED IDLENESS ON CONVICTS. One special phase of the labor problem that comes to the front every little while is the question of the effects of the anticonvict labor laws on the health and mortality of prisoners. Owing to the demands of the labor unions, several states have passed laws which prohibit contract labor in the prisons, and which seriously embarrass the prison authorities in the management and discipline of the institutions. It is a well-known fact that idleness of prisoners tends to physical and mental deterioration; an increase of insanity, as well as a general impairment of the health and well-being of the prisoners, has generally followed the enacting of the laws aforesaid. Even under the best of conditions, with plenty of work, some mental deterioration is inevitable in prisoners. Add to this the restlessness and worry of enforced idleness, and the chances of mental breakdown are vastly increased. If our criminal laws were strictly punitive in their intent it would still be a serious question for criminologists whether it is just to add the deprivation of reason to the other punishments contemplated in the law. Yet this is practically what is being done in a large number of cases when convict labor is prohibited or seriously restricted. It would be, perhaps, more merciful and certainly more economical to the state to re-act the old laws making capital punishment the penalty for nearly every serious crime. Under the enforced idleness plan, many a short sentence is made practically one for life; for prison-bred insanity is not, as a rule, of a curable type. The economic side of the question need not be discussed; its aspects are self-evident. The legislators who pass such laws, and those behind them who advocate them, have a serious responsibility to meet—a responsibility in which the medical profession shares if it fails to raise its voice in protest. Abstr. Jour. A. M. A.

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*The Lancet, October 22, 1904.

RUPTURE OF BOTH QUADRICEPS EXTENSORS. By Samuel Blume, M.D. Riverhead, N. Y.—On the morning of November 19, 1900, while going down the front stoop of the office of Dr. William Carr, of New York City, when within two or three steps of the sidewalk, my right foot slipped, then my left, both heels remaining in place. To prevent myself from falling forward I naturally threw up both arms, bending backward, and in so doing tore both quadriceps extensors, the right about three-fourths of an inch above, and the left about one and a half inches above the patella. The fascii were also torn on both sides, and I fell on the sidewalk. Fortunately I turned slightly, striking on the outside of my right thigh, thus not doing any injury to my wrists or forearms.

Dr. Carr and an assistant helped me into his waiting room. A carriage took me to the residence of Dr. Henry M. Silver, who sent me to St. Mark's Hospital. Dr. Silver had ice constantly applied until the morning of November 24, when he operated. Over 70 chromaticized catgut ligatures were used in bringing the tendons, fibers, and fascia in apposition. A posterior splint was applied to both limbs. After one week these were removed and Dr. Silver put up both legs in plaster-of-paris, which extended from the instep to the hip-joint of each leg. This remained on for six weeks. On removal the wounds were found healed by primary union. Dr. Silver ordered massage, passive motive, and the use of electricity. I remained in the hospital three months and one day.

Dr. Silver constructed two artificial entensor tendons which the illustration will show. I used both for about three months. After that time I needed the left one only, for a few months longer, at intervals. I was very careful for a long time not to bring my legs at right angles with my thighs, for fear of weakening the extensor tendons, but last winter while in the Blue Mountains of eastern Oregon I got into very deep snow and I was compelled to put them in that position to get out. I was quite sore for a few days about both knees—but it did them good. At the present time no one would know that I had ever had such a severe injury. I walk as well as ever. Abstr. American Medicine.

LET THE LUNGS ALONE IN PULMONARY TUBERCULOSIS.—W. Hutchinson says that we have learned by bitter experience that we must practically ignore the bacillus in our treatment of the tuberculosis, and that we are coming to the same point of view in regard to the lungs. Among the reasons for letting the lungs alone in treatment is the fact that very few remedial measures at our command have any specific action whatever on the lungs, and it is being more and more clearly recognized that pulmonary tuberculosis is not, properly speaking, a disease of the lungs, but is merely a local (pulmonary) expression of a disease which involves the entire system. We have no tonic or alteratives which will improve the nutrition of the lungs, and even the expectorant drugs have been proved to be lacking in the virtues formerly ascribed to them. Sprays, etc., are ineffectual in reaching the bronchi, and in many cases the so-called pulmonary gymnastics and exercises serve simply to drive the infectious material deeper into the hitherto uninvaded areas of the lungs. Hutchinson has already shown that the chest of the tuberculous is round instead of flat, and that exercises intended to develop the chest as such do harm instead of good. Bodily exercise of any kind is now believed to be distinctly injurious, and absolute rest is indicated in any case in which the afternoon temperature rises above 100°. Researches by Robert and Binet made over four years ago on the actual gaseous interchange in the tuberculous have shown that the tuberculous patient consumes a much greater amount of oxygen and gives off more carbon dioxid in proportion to its body-weight than the normal individual. In short, it would appear highly probable that the tuberculous patient is to be regarded in the light of one who is pouring nearly half the heat of the fuel which is burned in his body furnace up the chimney in the form of smoke. The food which he takes, instead of being assimilated and decomposed by anaerobic processes in the body cells, is burned in the blood and in the lungs. Any means, therefore, which will tend, so to speak, to clog the throat of his chimney and prevent this fatal escape of heat and energy, whether by drugs like creasote, iodoform, codliver oil, and arsenic, or by pouring in an enormous quantity of food rich in heat value, will tend to restore the balance of gaseous interchange and enable him to return to the normal. Medical Record.

FRESH AIR IN NERVOUS CASES.—Dr. Van Oordt considers that treatment by means of rest in the open air, like that prescribed in tuberculosis, gives excellent results in the nervous complications of the infectious nervous disorders of digestion accompanied by emaciation; insomnia, cardiovascular neuroses, medullary irritability, and tabes are also indications. In hysteria, neurasthenia, neuralgia, migraine, and obsessions this treatment is without result.—Zeitschrift für diatetrische und physikalische Therapie, 1904, No. 5, p. 281. Amer. Jour. Med. Sci.

AGE LIMITS IN COLD WATER THERAPY.—Dr Winternitz protests against the prejudice which exists against the employment of cold water in anaemic and debilitated persons on the ground that it extracts body heat. On the contrary, according to him, the cold water augments the production of heat. In infants cyanotic and cold from gastroenteritis he has obtained remarkable results by means of friction with cloths wrung out in cold water.

Such applications provoke a considerable excitation of the organic functions and are indicated in the infant in all torpid conditions and circulatory disturbances. He considers extreme youth no contraindication to the application of cold water. Likewise in old age he recommends rapid local use of cold water. Arteriosclerosis is no contraindication. At first sight this would not seem true for cold increases the blood pressure, already below normal in atheromatous patients. The author recognizes two varieties of arteriosclerosis, one with increased blood pressure, the other, and these are the more gravely affected, with an arterial pressure below the normal. But quick applications of cold lower the pressure in the first group and elevate it in the second; in the former class the hydrotherapy stimulates inhibition, in the second it excites the organism.—Blätter für klinische Hydrotherapie, 1904, No. 8, p. 173.

SCHOOL HYGIENE IN BERLIN.—In the current year for the first time an examination by physicians was made in Berlin of the school children. 1500 children were examined. 10% were excluded from instruction from one-half to an entire year on account of bodily or mental defects; 25% of the children suffered from congenital physical weakness; 16% had not entirely recovered from previous severe illnesses; 5% were tubercular; 15% were anaemic or scrofulous; and 10% were unfitted for school work on account of mental weakness. Allgemeine Wiener medizinische Zeitung.

HYGIENIC PRECAUTIONS.—At the International Congress on Tuberculosis held at Berlin last October Dr. Obertüschen, commissioner of health at Wiesbaden, made an address on the part that should be taken by the school in the struggle to overcome consumption.

The chief points of his address were as follows:

I. The school should take part in this attempt, because, in the first place, it is the chief promoter of all human progress. Secondly, since the school is an obligatory state organization, both teachers and pupils should be protected as much as possible from the danger of contagion with tuberculosis.

II. The struggle against tuberculosis should be furthered by two facts:

a. It is a curable disease.

b. It is a contagious disease.

Since it is curable it is the duty of the school to see (1) that every child suffering from it be excluded from instruction, and, if possible, that he be sent to a children's hospital.

(2) That every consumptive teacher should give up teaching, and that, moreover, even after his recovery, he should, without losing his position, remain in the hospital as long as his physician considers it necessary.

(3) Schools may take further precautions against contagion by

a. Paying greater attention to physical exercises, particularly to those tending to strengthen the lungs and heart during the period of development—from the fourteenth to nineteenth year.

b. By assisting the student in choosing his career.

c. By instructing students concerning the nature of infectious diseases and the means of avoiding contagion.

THE QUESTION OF ACUTE CARDIAC DILATATION.—Starck says that the possibility of acute dilatation of the heart accompanying exertion, followed by rapid return to normal size is still disputed, as various authors who have studied the question, both clinically and experimentally, have arrived at widely different conclusions. He describes the case of a student who was examined shortly before a student duel and again immediately afterward, when he was found to have enormous cardiac dilatation, which had, however, almost completely disappeared a few hours later. The patient had experienced similar attacks of tachycardia and cardiac pain after other severe exertions, such as bicycling, and the author attributes the weakness to a preceding typhoid and other infectious diseases. The enormous dilatation taking place at the duel, which gave rise to such severe distress as to compel interruption of the combat before it had lasted more than a few moments, must be ascribed to psychical excitement rather than to fatigue, as the muscular work had been only very slight.—Münchener medezinische Wochenschrift.

THE AMOUNT OF CARBON DIOXID EXCRETED WHEN MUSCULAR WORK IS PERFORMED, G. Koraen (Skand. Arch. Physiol., 16 (1904), No. 5-6, pp. 381-389).—Continuing earlier work (E. S. R., 14, p. 789), the author was himself the subject of experiments in which the muscular work was measured with specially constructed apparatus, and the respiratory quotients determined in a respiration apparatus.

It was found that both hunger and severe muscular work diminished the production of carbon dioxid when work was performed as well as during rest, a change which was not effected by a diet of fat. On the other hand, the use of sugar increased the production of carbon dioxid to its normal amount when work was performed. The observed data indicate that in hunger with a diet of fat the glycogen content of the body is used up or reduced to a minimum, and hence muscular work causes an increased cleavage of body fat.

If the body has opportunity to accumulate more glycogen, it again takes part in the metabolic processes in the same way as before. The amount of glycogen in the body, therefore, plays a by no means unimportant rôle in the cleavage processes brought about by muscular work, but how important the experiments reported do not show. Exper. Stat. Record.

PHYSICAL EDUCATION IN ENGLAND.—From Brit. Med. Journal. Sir,—In the British Medical Journal of November 19th, p. 1248, there appears a notice of a meeting to consider the advisability of founding a central institute for physical education in London, and at page 1422 some editorial remarks of a somewhat caustic nature upon this meeting. The notice is rather too brief to convey to the readers of the Journal a complete idea of what the object of the meeting was, and I therefore should like to explain it as briefly as possible. The motion was to found a central institute in London on the same lines as that in Stockholm, but with very considerable limitations. As I pointed out in seconding the proposal, the Central Institute in Stockholm has two distinct functions: (1) that of teaching physical education; and (2) that of granting certificates of fitness. These two functions are combined in the Stockholm Institute, just as they are in the case of medicine in the University of Edinburgh, but they may be perfectly distinct, as they are in the case of the University of London and its affiliated schools. In the event of the establishment of a school for physical training in London it would be better that it should remain separate from an institute which would grant certificates, and that London and provincial schools should equally be affiliated to such an institute, which should hold examinations and grant certificates to scholars from any school recognized by it on the same plan as that followed by the University of London. As there are a number of excellent schools for physical education already in the neighborhood of London and in large provincial towns, it would obviously be unfair to them that any new school founded in London should arrogate to itself any pre-eminence over them in the matter of giving certificates.

But it may be asked, if there are already so many schools for physical education why should another be started? The answer simply is that a great movement in the direction of physical education in schools is going on in the country, and there does not seem to be at present adequate provision for the training of school teachers in this subject.

The Board of Education is doing a great deal in this direction, and the presence of Lord Londonderry (President of this Board) at the meeting, shows the interest he takes in the subject, although he was careful to disclaim any official responsibility in the matter. The Central Institute in Stockholm does not only grant certificates, it also teaches physical training, and of this, as mentioned in the British Medical Journal, p. 1428, there are four sections: (1) Educational, (2) medical, (3) military, and (4) æsthetic. The two latter sections are not intended to be taught in the proposed school in London, and as there is likely to be a difference of opinion regarding the teaching of medical massage and movements, the section was also omitted in the resolution. The essence of the proposal, therefore, is that it is advisable:

(1) To establish a school for teaching physical exercises in

London, so as to supplement the schools at present at work, and give a supply equal to the increased and increasing demand.

(2) To establish a central institute which shall co-ordinate all the schools for this subject throughout the country, by holding proper examinations, and if required making proper inspections so as to maintain a properly high standard of efficiency in all.

I think that these objects are likely to commend themselves to all who have the welfare of the country at heart.

In regard to the teaching of medical massage and movements and issuing certificates and licenses to masseurs and masseuses opinion is likely to be more divided. For my own part, I regard massage as a useful therapeutic instrument, which like opium is capable of doing great good, and is also capable of great abuse. And just as the law prevents opium from being sold by ignorant persons, and punishes those who sell it carelessly, and therefore facilitate its criminal use, so massage should be regulated in like manner, and the public safeguarded against mischief, either from its ignorant use or wilful abuse. Frequently English masseurs and masseuses come to me with the complaint that the Swedes come to this country and take the bread from their mouths. But the reason is simple. The Swedes know their work because they have spent either two or three years in learning it, whilst many of the English applicants who come to me asking for cases, tell me they are thoroughly trained in massage, medical electricity and the Nauheim treatment, because they have attended a full course lasting three months. This seems to me to show the desirability of some school where English masseurs and masseuses might obtain as thorough a training in London as the Swedes do in Stockholm. But this question is still an open one, and so are all the details of the proposed School and Institute for Physical Education. The scheme is still in embryo, but it is to be hoped that the medical profession generally will take it into consideration, and that each medical man will help as far as he can to promote physical education throughout the country by carefully considering the lines on which it should be carried out, giving advise when he can, supporting the proposals which are right, opposing those which are wrong, and perhaps also assisting by investing money in schools which, if properly conducted, should require no charity, but should, on the contrary, bring in a fair dividend to their supporters.

I am, etc.,

LAUDER BRUNTON.

London, W., Nov. 21.

We have received from Miss Theodora Johnson a long letter containing a good deal of irrelevant matter. Miss Johnson complains of the brevity of our report, and encloses "a fuller press report from a newspaper." We observe that this is in reality a printed "abstract" issued to the press before the meeting "of Miss Johnson's scheme for national physical education, to be read before the conference she has convened to meet on Wednesday, November 16th." We desire to be perfectly fair to her, and therefore, in response to her request, reproduce the following paragraphs:

The next point is the spread of hygiene and physiology by means of public lectures for the poor delivered by the staff and senior students of the college.

Further, the college might affiliate already existing institutions of acknowledged worth and suitable standing—like the National Health Society.

Finally, the parent institution would form similar institutions in Edinburgh, Dublin, and many of our great cities.

We had omitted these paragraphs out of kindness to Miss Johnson, as her reference to the National Health Society shows that she has a very imperfect acquaintance with the object of that body, while the first paragraph quoted can but confirm the opinion that the scheme presented to the conference deserved, by reason of its indefinite character alone, the fate which it met with at the hands of Sir William Church.

THE TEACHING OF HYGIENE IN LONDON SCHOOLS.—Physical Training.—It is only nineteen years since the teaching of physical exercises was made a compulsory subject for boys and girls in elementary schools. Now all class teachers take their own classes in physical exercises, the reason for this being the difficulty of obtaining experts for such numerous schools. Besides this, although their teaching is naturally inferior to that of experts, the personal influence which they may be supposed to have over their pupils, and the knowledge of their health and physical strength are believed to compensate for the lack of the extra skill of the professional.

Teachers, therefore, are obliged to go through a course of practical lessons; these last one hour, and take place once a week for twenty-five weeks. Until within the last few years the theoretical examination consisted in answering on paper a few questions connected with the physical education of school children. But now all teachers in London, male and female, in addition to the practical must pass a theoretical examination in hygiene and physiology before they can obtain a certificate of competency to teach physical exercises in school. Teachers possessing advanced certificates in physiology and hygiene need not pass this examination, but no teacher of physical exercises who has not passed in these subjects can obtain a certificate, and, with it, the increase in salary granted for this subject—£5 in the case of men and £3 in the case of women. Nevertheless—and this is a first grievance to them—they are allowed to go on teaching physical exercises until they succeed in passing the theoretical examination. The value of such an examination cannot be for one moment disputed, for to teach physical exercises without a proper knowledge of the effect such exercises have upon the body is manifestly dangerous.

But is the theoretical examination in hygiene and physiology as now taken by teachers quite suitable to the object for which it is intended? Does it not seem absolutely necessary for teachers of physical exercise in elementary schools to be obliged to obtain the advanced certificates in physiology and hygiene of the Science and Art Department, or to undergo an examination equivalent to that held by that Department to obtain a certificate, when their practical teaching is perhaps of an excellent kind?

The following are the subjects required of candidates in the examination laid down by the London Education Committee:

"The Council's examination consists of two parts—practical and theoretical; but teachers who possess certificates of the Board of Education (South Kensington) in advanced physiology and hygiene, or who prefer to qualify for them, are exempted from the theoretical part of the examination. This part of the examination will consist of (1) physiology and (2) hygiene; and will cover the work laid down in the following approved syllabus:

"(1) Physiology.—General acquaintance with the build of the body and the bones of the skeleton; special study of the spinal column, the ribs, and shoulder girdle, the pelvic basin, and the bones of the limbs; the chief joints, their classification and movements; muscle and movement; structure and function of bone and cartilage; general acquaintance with physiological functions, with a more careful study of respiration, circulation, the abdominal organs and digestion; the skin and its functions; the nervous system in outline.

"(2) Hygiene.—Rules of hygiene so far as they apply to the following:

1. Effects of exercise (local and general).
2. Rules to be observed during and after muscular exertion.
3. Symptoms of over-exertion.
4. Advantages of frequent short exercises.
5. Effects of bad posture in sitting and standing; good postures—reading, writing, and needlework.

6. General rules for conducting a lesson in physical exercises.
7. Class-room exercises; ventilation of rooms.
8. Games as physical exercises.

With reference to the examination in theory, teachers are informed that they cannot hope to pass the examination without giving evidence of a practical knowledge of the human body, and they are strongly recommended to take advantage of the facilities afforded by the London County Council evening schools, or to adopt other means for obtaining an adequate knowledge of physiology.

The ground traversed by this apparently slight syllabus is enormous, because in order to find the material to answer the questions embodied in such a syllabus a very wide extent of ground has to be traversed and a great deal of useless knowledge taken in with the useful and necessary.

What makes this specially pathetic to those behind the scenes is the actual result of all this cramming of advanced anatomy, physiology and hygiene. You watch a teacher who has qualified in practice and theory, she probably holds a paper in her hand with a list of the exercises and certain mechanical indications to be given to the children, and—without doing her any injustice—it must be said that simply because her theoretical examination has not been conducted on the proper lines, far more of her attention is given to the paper than to the children.

It is admitted that the answers returned in the written examination by ordinary teachers who have been through the theoretical course show that as a general rule, they have failed to understand the real importance of the subject with which the questions deal; their answers make it evident that they have just clung to some of the technical terms, and even these they cannot spell. Abst. Brit. Med. Jour.

THE ART OF LIVING. Ellen H. Richards (Boston: Whitcomb & Barrows, 1904, pp. 50).—The relation of food, exercise, sleep, amusements, environments, etc., to normal, healthy life is discussed, the volume as a whole containing many useful suggestions regarding the hygiene of living.

The author points out that while climate is not under our control and habits must be adapted to it, yet food, shelter and sanitation in the main are under personal control and should receive the attention that they demand. Education in these and related topics is in her opinion of the utmost importance.

The volume is a condensation of lectures given at Knoxville, Tenn., in 1904, before the Summer School of the South. Exper. Station Record.

FIRST LESSONS IN FOOD AND DIET. Ellen H. Richards (Boston: Whitcomb & Barrows, 1904, pp. IV+52, dgm. 1).—In this introductory text-book the principles of nutrition are plainly stated and some of the more important questions connected with food and diet are taken up. The 10 lessons include such topics as plant life, the school luncheon, daily food, and principles on which bills of fare are made. In each lesson the subjects are discussed in a clear and concise manner and directions are given for the preparation of illustrative material. Exper. Station Record.

PRACTICAL DIETETICS. A. L. Benedict (Chicago: G. P. Engelhard & Co., 1904, pp. 383).—In this volume, which is especially designed for physicians, the author discusses the chemical basis of dietetics organic and inorganic food constituents, dietetics in health, foods and condiments, conditions of diet and digestion, dietetics at different periods, as well as dietetics with special reference to different diseases and related questions. Exper. Station Record.

A STUDY OF THE PULSE RATE IN MAN AS MODIFIED BY MUSCULAR WORK. W. P. Bowen (Contributions to Medical Research. Ann Arbor, Mich.: George Wahr, 1903, pp. 462-494, figs. 9).—A graphic method of recording pulse rate is described and experiments are reported which have to do with the effects of muscular work as shown by changes in pulse rate. Some of the conclusions follow:

"Muscular work is accompanied by a marked acceleration of the pulse, which begins with the next heart cycle after the work begins, and in typical cases shows three well marked stages: A primary rise, a plateau, and a secondary rise. Similar stages of decrease in rate occur after the work stops. . . . The rapidity of the pulse during work depends not only upon the amount of work done but much more upon the manner in which it is done. Speed and resistance are factors requiring separate consideration, and of the two, speed has much the greater influence. . . .

"The changes in pulse rate during work and at its end are so sudden and so rapid that the only reliable information concerning them must be acquired while the work is in progress; for this purpose a continuous graphic record is far superior to any other method that has been employed." Exper. Station Record.

THE WORK PERFORMED IN RIDING A BICYCLE. W. Berg, R. du Bois-Reymond, and L. Zuntz (Arch. Anat. u. Physiol., Sup., p. 20; abs. in. Zentbl. Physiol., 18 (1904), No. 22, p. 710).—The energy which is required to propel a bicycle was measured by attaching it to a motor car and making a dynamometer test. A comparison of the results obtained with values which Zuntz has reported for the total energy expended by a bicycle rider showed that 25 per cent. of the total energy expended by the rider is used for forward progression. The ordinary resistance in rapid riding, the effect of the position of the body, the work of the legs, and other questions, were also studied. Exper. Stat. Record.

PHYSICAL TRAINING THAT IS EDUCATIONAL. Rebecca Stoneroad, Washington, D. C.—The true educational value of physical training is that it is a training for life. The department of plays and games holds a high place in this connection, for in no other form of physical exercise, can we get in so short a time those qualities of quick observation, reasoning, decision, nerve, and muscle control. The constant playing of a game secures accuracy and quickness of execution, generally termed skill, which enables one not only to do this thing well, but all allied movements, thus relating them to the great purpose of education which is the power to do.

It is by means of the class exercise that we are enabled to influence each and all of the hundreds of children in a grammar school. The opportunity is given for a personal inspection and individual training in posture and habit. School gymnastics, although an artificial system of exercise, have the advantage over plays and games in our educational scheme on account of their practicability. We can give daily to large masses of children in a short space of time in all seasons and under all conditions of weather, without playgrounds, a certain amount of all round physical exercise based upon physiological principles, calling into play all the muscles of the body, and so planned and executed as to be of the greatest educational value.

It must be distinctly understood that school gymnastics are not recreation. They are school work. I would never attempt to substitute such work for the play of recess. Both departments of physical education, the plays and games, and the formal gymnastics are necessary and should go hand in hand in a perfect system of physical training.

While retaining the educational purpose and value of physical training the method of teaching can be one which arouses interest, delight, and pleasure. So let us introduce more of the recreative element into what by its very nature could resolve itself into a dreary, monotonous drill. The more recreative the educational gymnastics, and the more educational the play, the better will be the system of physical training adapted to grammar schools. The School Journal.

THE CHILD'S PHYSICAL DEVELOPMENT. Stuart H. Rowe, Brooklyn, N. Y.—So much progress has been made in lighting, heating, ventilating, and seating schools that these former scapegoats for the mistakes of teachers and supervisors no longer serve their ancient useful purpose. There is a decline in the physical condition of children from September to June even in the best built and equipped schools.

The following are submitted explanations as possible causes:

1. Failure to make proper use of school equipment.
2. Faulty postures in sitting (especially while writing) and in standing and walking (especially while carrying books).
3. Lack of provision for out-of-door play.
4. Lack of freedom from restraint in-doors.
5. Methods productive of worry and confusion.
6. Overstimulation due to failure to provide rest periods or proper alternation of the harder and the easier work.
7. Failure to adapt method to individuals lacking normal physical development.

Important suggestions are: abundant time for free play in the open air winter and summer and in daylight, more short vacations rather than one long vacation, better knowledge of school equipment by teachers, more attention to postures (sitting, standing, and writing), plays, games, out-of-door observation, free constructive work, adaptation of the child's instinctive forms of expression, necessity of making important forms of reaction habitual and not merely suggested, essential healthfulness of clear and definite method and straightforward discipline in avoiding confusion, the reduction to the minimum of sources of worry (such as examinations, tests, marks, rules and regulations, and arbitrariness or nervousness in teachers), provision in the program for rest periods and alternation of work, preparation of teachers to detect symptoms of eye and ear defect, spinal curvature or indications of disease, to test where it is desirable, and to adapt method to such physical defects as cannot be removed, and, finally, positive gymnastic exercises. The School Journal.

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No. 134 (April). Physical Training and Athletics in the Schools: an Address at the Sixtieth Annual Meeting of the Massachusetts Teachers' Association at Boston on November 25, 1904 (concluded in No. 135). Does the Technical Side of Our Profession Receive Its Due Share of Attention To-day? by Carl L. Schrader. General Wingate's Address at the Annual Meeting of the (New York City) Public Schools Athletic League.

No. 135 (May). Physical Training by Means of Play, by Belle Ragnar Parsons. Per Henrik Ling and His Successors at the Stockholm Normal School of Gymnastics, by Dr. F. E. Leonard (reprinted from the December REVIEW. To be continued.). Dumb-bell and Iron Wand Drills to Be Given at the Indianapolis National Festival of the N. A. G. U. Course of Study in the (Milwaukee) Normal School of the N. A. G. U. during the Last Quarter of 1904-1905.

MONATSSCHRIFT FUER DAS TURNWESEN. BERLIN, WEIDMANNSCHE BUCHHANDLUNG, 1905. VOL. XXIV.

No. 1 (January). Who Shall Teach Gymnastics in the Secondary Schools? by Fritz Eckardt. Prussian *vs.* Baden School Gymnastics, by Moldenhauer. Review of H. Schröer's "Methodik des Turnunterrichts" (Leipsic and Berlin, B. G. Teubner, 1904), by Fr. Schmale.

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No. 3 (March). Home Tasks and Play, by Paul Opitz. Class Instruction in Swimming for Pupils in the Hanover Elementary Schools, by Dr. E. Kohlrausch. Review of the Third Edition of Dr. Eduard Angerstein's "Geschichte der Leibesübungen in den Grundzügen" (8 vo., 4+211 pages. Vienna and Leipsic, A. Pichlers Witwe und Sohn, 1905), by Küppers; and of J. P. Müller's "Mein System. 15 Minuten täglicher Arbeit für die Gesundheit" (translated from the Danish. 84 pages. Leipsic, K. F. Köhler, 1904), by H. Schröer.

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No. 23 (February 11). Conditions that Unfit for Military Service, and Their Prevalence, by Dr. Hugo Meisner. The Importance of Johann Bernhard Basedow in the History of Physical Training, by Dr. W. Moestue.

No. 24 (February 25). Broad Jumping with the Pole, by Emil Welz.

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No. 9 (March 2). Joseph Isenbaert, a Veteran Belgian Teacher of Gymnastics, by Friedrich Schloer. The Question of Apparatus Exercises for Women, by Gustav Jurisch.

No. 10 (March 9). Gymnastic Society and Athletic Club, by Dittrich. Mechanics and Gymnastics, by Dr. Fritz Walther.

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No. 14 (April 6). Concerning Gymnastics for Women, by Prof. Dr. R. Zander. Karl Wüst (for Fifty Years Teacher of Gymnastics in the University of Tübingen), by Hch. Hermes.

No. 15 (April 13). The One Hundredth Anniversary of Schiller's Death, by Boethke.

No. 16 (April 20). The First German Institution for the Teaching of Gymnastics, Founded in the Year 1805 at Erlangen by Dr. Joh. Ad. Karl Roux, by Herman Kuhr (continued in Nos. 17 and later). Growth and Spread of the German Turnerschaft, by Kurt Blaum (concluded in No. 17). Program of the Twenty-ninth National Gymnastic Festival of the North American Turnerbund, to Be Held in Indianapolis June 21-25, 1905.

F. E. L.

TIDSKRIFT I GYMNASTIK. STOCKHOLM, P. A. NORSTEDT & SONER.

Double Number for 1904 (Vol. V, Nos. 9-10). Physical Exercise Gives Health and Strength, by Dr. Anders Wide. Medical Gymnastics and Massage and the Relation of the One to the

Other, by Ernst Jacobsson. Some Important Chapters in Orthopedics, by Patrik Haglund. The Need of Orderly Physical Exercise for Young People of School Age Who Have Left the Schools, by G. W. von Heideman. The Year's Repetition Courses in Gymnastics for Teachers in Elementary Schools, by L. M. Törngren. Review of C. A. Westerblad's "Pehr Henrik Ling. En Lefnadsteckning und Nagra Synpunkter" (Stockholm, P. A. Norstedt & Söner); and of E. Kallio's "Handbok i Kvinnogymnastik" (Helsingfors, G. W. Edlund, 1904). Gustaf Nyblæus (1816-1902), by L. M. Törngren. Proceedings of the Scandinavian Association of Teachers of Gymnastics in 1903 and 1904, and a List of Its Members December 31, 1904.

PHYSIOLOGICAL ECONOMY IN NUTRITION. By Russell H. Chittenden, Ph.D., LL.D., Sc.D., Director of the Sheffield Scientific School of Yale University and Professor of Physiological Chemistry. New York: Frederick A. Stokes Company. 1904.

Professor Chittenden has gathered in this volume the results of his studies on the nutrition of soldiers, students and professional men, carried on in Yale Univerity during the past two years. In the introductory chapter several standard dietaries are cited, including the famous Voit standard consisting of 118 gms. proteid, 56 gms. fat and 500 gms. carbohydrate, with a fuel value of 3,000 calories, as the food required daily by a man doing moderate muscular work. These standards are criticized as being merely statements of the dietetic habits of the people investigated, and not necessarily representing the real needs of the body. If the "standard" amounts of food are too large, there may be a physiological economy with a more restricted diet, and a gain to the body from diminished loss of energy in ridding the body of the excess.

The experiments were undertaken to test the possibility of a physiological economy of nutrition, and with special reference to the minimal proteid requirement in health and normal living Five professional men, thirteen representatives of the United States army, and eight Yale athletes served as subjects for the investigation. The observations were carried on for at least six months and in some cases eighteen months.

The professional men reduced their proteid intake to one-half or one-third the amount required by the standard dietaries, lowered the caloric value of the food to 2,000 and 2,500 calories, and did their daily work with uninterrupted health and vigor, indeed, in some cases with improved bodily conditions. The men from the United States army, representing moderate manual labor, confirmed in all respects the results obtained in the professional men.

The soldiers metabolised less than 50 gms. of proteid and found 2,500 to 2,600 calories ample for their daily requirements. Some of these men living on the low proteid diet, more than doubled their strength tests between October and April, increasing in one case from 2,504 units to 5,178, and in another case from 2,835 to 6,269. Much of this increase was undoubtedly due to gymnasium training, but the results contributed by the athletes, already trained in the gymnasium, prove that the diet itself may also have been effective. These athletes for a period of five months reduced their proteid intake more than 50%, not only without loss of bodily strength, but with marked improvement of muscular power. In one case on 46.4 gms. proteid daily the strength test increased from 4,548 in January to 5,667 in June, in another case, from 4,584 to 5,917, and there was testimony to greater freedom from fatigue on the low proteid diet.

Tables presenting full analyses of food and excreta for each individual fill a large part of the volume. The physical condition of the men is shown by photographs. Professor Chittenden concludes with a discussion of the value of physiological economy of nutrition, especially in saving the body of the labor of ridding itself of possibly harmful nitrogenous waste; and he also calls attention to the economic and sociological importance of his results. The book is an excellent example of a thorough-going scientific investigation of a problem of great interest to both physicians and laymen. Boston Med. and Surg. Jour.

CHARITIES. NEW YORK. 1905.

April 15, 1905. The Social problem of family desertion.

April 22, 1905. Child labor in France, H. J. Brunhes and F. H. McLean; p. 676. Family desertion and non-support laws, F. E. Wade.

May 6, 1905. The smaller city.

June 3, 1905. Availability in playgrounds, Joseph Lee; p. 793. The needless destruction of boys, Florence Kelley; p. 798. Health as an investment, Homer Folks; p. 810.

June 24, 1905. The treatment of the delinquent; p. 855. The great black plague; p. 857.

July 8, 1905. How shall we select our immigrants? Robert D. Ward; p. 906. Family desertion and non-support laws, Wm. H. Baldwin; p. 912.

July 15, 1905. The probation system in New York State; p. 917. Duplication in fresh air outings; p. 919.

July 22, 1905. Standard of living, Charles P. Neill; p. 941.

Aug. 5, 1905. Babies at play, Jane R. McCrady; p. 973. How to save the babies in the tenements, Virginia M. Walker, p. 975.

Fresh air for the youngest Sweeney, Anne O'Hagan; p. 981. Superstitions and customs of the tenement-house mother, Elsa G. Herzfeld; p. 983. The home treatment of summer diarrhœa in infants and young children, E. Mather Sill; p. 987.

AMERICAN GYMNASIA AND ATHLETIC RECORD.

Announcement is made in the July number that the subscription price is to be lowered to $1.50 per year, beginning with the August number. Old subscribers who paid $3.00 are to have their subscriptions extended to two years without further payment. The future of the publication is claimed to be assured and improvements are to be made.

It has established itself as a valuable physical training news carrier to which all interested should subscribe. That the publication has "found itself" and a substantial field of recognition is cause for hearty congratulations to its promoters and especially to its managing director.

G. W. F.

AMERICAN GYMNASIA. BOSTON. 1905.

March, 1905. Chicago's public gymnasiums, E. B. DeGroot.

April, 1905. Public school athletic league in New York; pp. 205. Playgrounds for schools, and importance of intelligent direction, Joseph Lee; p. 209.

May, 1905. American Physical Education Association Convention; p. 236. Annual meeting of the Society for Research in Physical Education; p. 243. Progress of municipal physical education in Chicago; p. 245. Development of the medicine ball and class drill, R. J. Roberts; p. 248. Classic dancing, M. B. Gilbert; p. 249. Value of bibliography, Elmer Berry; p. 251.

June, 1905. Conference of Y. M. C. A. directors; p. 266. Public school physical training for Cleveland; p. 271. Methods in university gymnasiums, W. G. Anderson; p. 275. Value of bibliography and practical suggestions for its use, Elmer Berry. Medicine ball class work, R. J. Roberts.

July, 1905. Turners' national gymnastic festival; p. 290. Qualifications for instructors of physical training; p. 293. Place and attention given non-athletic students in college, W. G. Anderson; p. 297. Medical Gymnastics, J. W. Seaver; p. 304. Long distance road running and effects on contestants; p. 308.

EDUCATIONAL REVIEW. NEW YORK. 1905.

June, 1905. Bibliography of education, Lord and Wyer; pp. 41-94, (466 titles).

THE ELEMENTARY SCHOOL TEACHER. CHICAGO. 1905.

March, 1905. Extracts from the last report of the superintendent of the Chicago vacation schools, Mrs. I. S. Blackwilder; pp. 431-8.

THE SCHOOL JOURNAL. NEW YORK. 1905.

June 24, 1905. The new playgrounds of Chicago, Dr. H. S. Curtis; pp. 740-2.

PEDAGOGICAL SEMINARY. WORCESTER. 1905.

March, 1905. Obstinacy and obedience, T. L. Smith; pp. 27-55. Preparing manuscript for the press, Louis N. Wilson; pp. 55-69. Elementary education in England, Anna J. McKeag; pp. 69-86. The question of method in nature study, M. F. Guyer; pp. 86-93. Child study at Clark University, T. L. Smith; pp. 93-97. Child study in Poland, Anna Grudzinska; p. 97.

June, 1905. Pedagogical arrests and peculiarities, Norman Triplett; pp. 141-157. Dynamic Biology in the college, C. F. Hodge; pp. 158-174. Boys' Gangs, J. Adams Puffer; pp. 175-212. The hygiene of home study, Wm. H. Burnham; pp. 213-230.

ASSOCIATION MEN. NEW YORK. 1905.

May, 1905. How to save life in the water, F. G. Sullivan; p. 359. How to foster games and athletics, A. E. Garland; p. 361. A Boy's camp worth while, A. A. Jameson; p. 362.

July, 1905. Efficiency in athletics, J. E. Sullivan; p. 447. Efficiency of the physical work, Dr. D. A. Sargent; p. 449. Boys' work, W. D. Murray; p. 450. The importance of the boys' work, Dr. C. A. Barbour; p. 450.

August, 1905. Take a rest, R. J. Roberts; p. 520. President Roosevelt on sport; p. 521. Boys' baseball leagues; p. 522. Instructions for life-saving; p. 522. Summer vacation and athletic records; p. 523.

EDUCATION. BOSTON. 1905.

April, 1905. How to test the quality of teaching, G. E Marker, A.M.; pp. 451-459. The true place of the kindergarten, Anna W. Devereaux; pp. 460-465. Interest as a factor in teaching, Julie C. O'Hara; p. 465. The place and function of biology in secondary education, Prof. C. W. Hargitt; p. 475. Unrecognized causes of corporal punishment, Henry L. Clapp; p. 490.

May, 1905. Manual training in the elementary school, J. P. Haney; pp. 515-525. School gardens in their relation to the three R's, Miss Persis K. Miller; p. 531.

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Report of the Director of Physical Training, Dr. Luther H. Gulick, in the Sixth Annual Report of the City Superintendent of Schools to the Board of Education of the City of New York for the year ending July 31, 1904. pp. 257-271.

Muscle Building. Luther H. Gulick, M.D. American Sports Publishing Company, 21 Warren St., New York. $0.10.

Physical Education, Cleveland. June, 1905. Burrows Brothers Co., Cleveland, Ohio.

School of Physical Education. Announcement. Chautaqua Lake, N. Y.

Spalding's official Athletic Rules of the Amateur Athletic Union of the U. S. American Sports Publishing Company, 21 Warren St., New York. $0.10.

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American Writers of To-day. Henry C. Vedder. Silver-Burdett & Co., New York.

Spalding's Official Baseball Guide. 1905. American Sports Publishing Company, 21 Warren St., New York. $0.10.

The Sunday School Athletic League of Brooklyn. New York. 1904.

Notes on the Waste of Time Incident to Defective Vision. L. K. Baker, M.D. Reprinted from the Cleveland Medical Journal, June, 1905.

Comparative Measurements of the Hard Palate in Normal and Feeble-Minded Individuals. A Preliminary Report. Walter Channing, M.D., and Clark Wissler, Ph.D. Reprinted from the American Journal of Insanity, Vol. LXI, No. 4, 1905.

Mechano-Therapy of To-day. Max J. Walter. Reprinted from the Trained Nurse and Hospital Review, March, 1905.

Systematic Massage in Neurasthenia and Anemia. Max J. Walter. Reprinted from the Trained Nurse and Hospital Review, July, 1905.

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Ny Tidning för Idrott. Weekly. Stockholm, Sweden.

Brooklyn Central. A Weekly Publication Devoted to the Varied Interests of Young Men. Published by the Central Branch of the Y. M. C. A., 502 Fulton St., Brooklyn, New York. $0.25 per year.

American Gymnasia and Athletic Record. Boston. Monthly. $1.50 per year.

Die Kinderfehler. Langensalza, Germany. Hermann Beyer & Son.

University of California Publications. Berkeley, Cal.

The Archives of Physiological Therapy, Boston. Monthly. $3 per year.

Report of the Commissioner of Education, Washington, D. C. Vol. I and II.

The Pedagogical Seminary. Worcester, Mass. Quarterly. $5.00 per year.

Experiment Station Record. U. S. Department of Agriculture, Washington, D. C. Monthly. $1.00 per year.

Anales de Instruccion Primaria. Montevideo, So. America. Monthly. $0.50.

Education. Boston. Monthly. $3.00 per year.

Journal of the Outdoor Life. New York. Monthly. $1.00 per year.

Charities. New York. Weekly. $2.00 per year.

Association Men. New York. Monthly. $0.50 per year.

The School Weekly. Chicago, Ill. $1.00 per year.

The School Journal, Weekly. New York. $2.00 per year.

Southern School and Home, Tallahassee, Florida.

New York Education, Albany, New York.

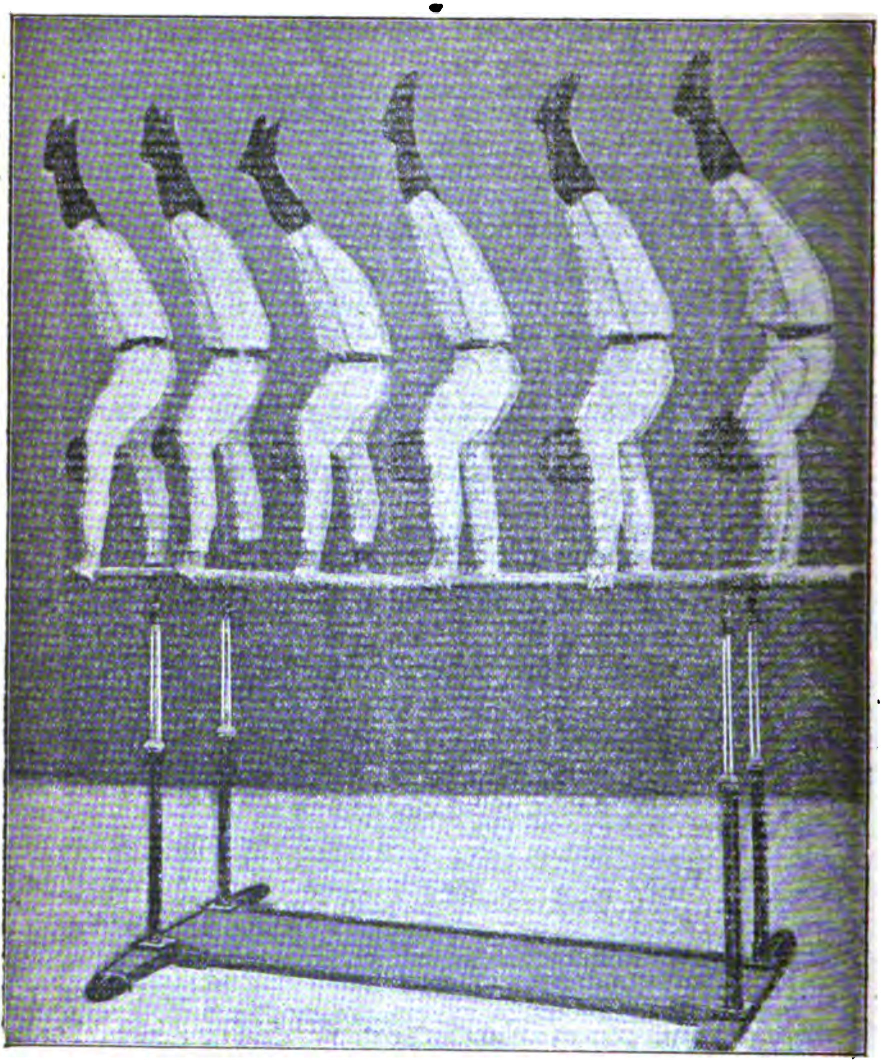
Mind and Body, Milwaukee, Wis. Monthly. $1.00 per year.

Journal of Pedagogy. Syracuse, New York.

French Gymnasium, 15 Rue Jean Lantier, Paris, France.

Elementary School Teacher, Chicago, Ill. $1.50 per year.

Educational Review, New York. Monthly. $3.00 per year.



The above cut is from a photograph of the German Team in the International Olympic Gymnastic Contests, and shows them doing a sextet hand stand on SPALDING PARALLEL BARS. A. G. Spalding & Bros. received an autograph letter from the entire team commending the superior quality of their Gymnasium Apparatus.

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The following publications of the A. P. E. A. may be obtained from the Secretary, George L. Meylan, 420 W. 160th St., N. Y. City, at the prices given below. The figures enclosed in parentheses indicate prices to members:

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Vol. II, 1897, pp. 264 [2 Nos., only Sept. and Dec., each]	0.50	(0.25)
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Vol. V, 1900, pp. 375 [4 Nos. at 50c (25c) each]	1.50	(1.00)
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Vol. VII, 1902, pp. 250 [4 Nos. at 50c (25) each]	1.50	(1.00)
Vol. VIII, 1903, pp. 316 [4 Nos. at 50c each]	2.00	
Vol. IX, 1904, pp. 326 [4 Nos.]	2.00	
Physical Training, by E. M. Hartwell, M.D. (from Report of Bureau of Education) 1897-8, pp. 102.	0.25	(0.20)
Athletics and Games of the Ancient Greeks, by E. M. Plummer, M.D., pp. 61	0.25	(0.20)
Mental Fatigue, by Herman T. Lukens	0.20	(0.16)
A Brief Rêsumé of Quetelet's "A Treatise on Man," by Wm. W. Hastings, pp. 43	0.25	(0.20)
The American Girl Today, by Geo. J. Engelmann, M.D.,	0.30	(0.25)
Title-Page to Vols. I, III, IV, V, VII and VIII of the Review for binding, each	0.02	

ATHLETICS AND GAMES OF THE ANCIENT GREEKS.

By **EDWARD M. PLUMMER**, M.D., Boston, Mass. Reprinted from the American Physical Education Review, 1898, 61 pages, paper cover. Contents: Athletic Games among the Homeric Heroes; The Olympic Games in Ancient Times; Toys and Games for Children among the Ancient Hellenes.

In this series of papers Dr. Plummer has made a genuine contribution to the literature covering the period of Hellenic physical training. His descriptions are constantly enriched by comparisons with modern methods, showing not only a clear, classical insight, but also a sympathy and appreciation for the modern aspects of exercise, which makes his work of special value.

Price, 25c.; to members of the A.A.A.P.E., 20c.; for six or more copies, 15c. each.

MENTAL FATIGUE.

By **DR. HERMAN T. LUKENS**, State Normal School, California, Pa. Reprinted from two papers published in the American Physical Education Review, 1899; 25 pages, 6 plates of curves, 3 tables, paper cover.

Dr. Lukens has been a student of fatigue methods and results for several years, at home and abroad, and has summarized his study in these papers. He discusses the nature and symptoms of fatigue, the apparatus and methods of study, and the results of the study. Appended is a carefully selected bibliography of 55 titles.

Price, 20c.; to members of the A.A.A.P.E., 16c.; for six or more copies, 12c. each.

PHYSICAL TRAINING.

By **EDWARD MUSSEY HARTWELL**, Ph.D., M.D., Boston, Mass. This is a reprint numbering 103 pages, octavo, of Chapter XII of the Report of the United States Commissioner of Education for 1897-8, 103 pages, 3 illustrations.

Dr. Hartwell's article may be characterized as a suggestive but comprehensive sketch in outline, of the theory and history of physical education, in which he has woven together the main portions of his principal published papers. In a sense it is a reissue (though in a much condensed and modified form, owing to a limited available space) of "Circular, No. 5, 1885" of the United States Bureau of Education, which is out of print, like most of Dr. Hartwell's other papers and reports.

Besides discussing the nature of physical training, and the educational value of gymnastics and athletics, the author describes the principal national systems of physical training, and briefly sketches the history of the most significant and influential recent movements in Europe and America, for the advancement of physical education, in his endeavor to show what the place of physical education is and what it should be in the modern scheme of elementary and secondary education.

Appended is an article of 20 pages, entitled "Significance of Physical Education Among the Greeks as presented in the Anacharsis of Lucian," being a translation with comment and notes of Lucian's "Anacharsis and Solon, or Gymnastics," by Charles E. Lowrey, Ph. D., librarian, University of Colorado.

Price, 25c.; to members of the A.A.A.P.E., 20c.; for six or more copies, 15c. each.

Title Page

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GEORGE WELLS FITZ, M.D.
FOR
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AMERICAN
PHYSICAL EDUCATION REVIEW.

GEORGE WELLS FITZ, M.D.
Editor.

VOL. X. DECEMBER, 1905. No. 4

BLOOD PRESSURE.*

C. WARD CRAMPTON, M.D.

New York.

PREFACE.

In the following work the writer has endeavored to reach the literature of the vascular effects of exercise, and to put it before the workers in physical training. Much valuable work, including that of Roy and Adami and Tigerstedt, has never before been available to the rank and file of the physical training profession. The writer has been particularly fortunate in the opportunity of reaching the works on the subject in several libraries. It is his earnest hope and desire that something has been accomplished in this work which will prove of value in assisting the workers in this branch of education.

The test outlined is entirely new as far as the author knows. The acceleration of the pulse on rising, as a test of condition, has been suggested by Hill in Schäfer's Physiology, and is in use, in a desultory way, with some insurance examiners. This has only recently come to the writer's knowledge. The responsibility for addition of the blood-pressure feature, as a test, must rest for good or ill upon the shoulders of the writer. Proof of its validity will, however, be found under the names of such authorities as Hill, Edgecombe and Oliver. Their results the writer has verified.

The second part of the work, the application of the results obtained in the first part, is the result of the experience of the writer and his most intimate co-workers: it is rarely taken from or suggested by the meagre literature on the subject.

---

*Thesis presented in the prize competition at the Louisiana Purchase Exposition, St. Louis, 1904, receiving a gold medal.

INTRODUCTION.

That the study of blood pressure, arterial and venous, is an investigation of worth to the physical trainer is undoubted. An exercise cannot be understood, nor its effects estimated, without a thorough comprehension of its effects upon the pressure of the blood, and the change it produces in the morphological elements of that tissue. Hence an effort has been made to correlate the diverse and voluminous literature, which deals with the subject, and to apply the results to the practice of physical training.

The subject will be considered under three heads:

1. The mechanism controlling the blood pressure.
2. Procedures causing variation, and consideration of their results.
3. Application.

THE MECHANISM CONTROLLING THE BLOOD PRESSURE.

This will be taken up under these four heads:

1. The heart.
2. The arterioles.
3. Variations in blood volume.
4. Hydrostatic pressure.

1. The heart.

Two of the variable features of the heart's beat, viz: its force and its frequency, will be considered.

Arterial pressure will be increased if the heart beats more forcibly, all other conditions being equal. The more forcible ventricular contraction will increase the immediate maximum pressure of the arteries, by forcing the blood more abruptly into them, but unless more blood is passed into the arteries there will result but an inappreciable increase of mean pressure, for the fall to the minimum pressure will be as abrupt as the rise, and influence the mean to a similar extent in a minus way that the increased force of the heart influenced it in a plus way. Unless, therefore, we have an increased frequency of beat or an increased amount of output, the mere increase of ventricular push will not influence the mean arterial pressure to any considerable extent. It is thus to be noted that the mean arterial pressure is not an index to the maximum, or vice versa. Howell & Brush* have found that while it is roughly the arithmetical mean of the minimum and maximum, yet the mean pressure may remain the same while the minimum and maximum vary.

The force of the heart beat will be very potent in determining the maximum pressure, but will influence the mean pressure but slightly.

Increase in the frequency of heart beat increases the arterial pressure, all other conditions being unchanged. As increase of rapidity means a relatively decreased diastole, there is less time for the pressure in the artery to fall from its maximum to as low a minimum as before, hence the mean pressure is raised. The maximum may not be raised (although it usually is).

This effect may be entirely overshadowed by peripheral changes, and we often find with increased heart frequency a decreased pressure on account of decreased peripheral resistance. Stewart states that the output of the ventricle is increased by a moderate rise in frequency, though in general when the pulse rate increases considerably the output per heart beat diminishes, while the output per second, and therefore the arterial pressure, may or may not alter.

It is interesting to note in passing that Bowen has found the actual decrease in length of time of systole to be in the case of bicycling (on a bicycle trainer) .50 of a second to .35 of a second. This may be followed by a steady shortening during the exercise to .225.

The influence of the changes in the frequency of the heart beat in producing changes in the arterial pressure is very slight. The following factors are the real determinants.

2. The arterioles.

There is a decisive fall in the blood pressure from the arteries to the capillaries, (about 75%); this is caused by the arterioles. The resistance to the onward flow of the blood, from the arteries through the arterioles, varies as to the size of the arterioles. Should the arterioles become contracted, the blood flowing through them would meet with a greater resistance and the arterial pressure would rise; should they become dilated, blood would flow through them more easily, and the arterial pressure would be lowered. This is perhaps the greatest factor which determines arterial pressure.

---

*See bibliography in appendix (1).

Venous pressure is also determined in part by the tone of the arterioles. Should the tone become relaxed, the venous pressure would rise; should it become increased, the venous pressure would fall. On this account the arterial and venous pressure usually bear an inverse relation to each other.

It may be noted *en passant* that the other great factors in regulating venous pressure is, first, the resistance offered to the onflow of the blood by gravity, and second, that presented to it at the entrance of the veins to the chest.

3. Variations in the blood volume.

These may be actual or relative.

The actual variations are those caused by excretion and absorption of fluid, the former lowering, the latter raising it.

The relative variations are far more important and instructive. The splanchnic circulation with its huge veins is a reservoir in which is stored a considerable quantity of blood, which, when thrown into the general circulation by abdominal compression or the nervous stimulation caused by exercise, etc., causes a considerable increase in the circulating volume of blood outside the splanchnic area, and a consequent rise in blood pressure. With the return of this additional volume of blood to the splanchnic area, there is a corresponding fall of blood pressure. This has been proven by many observers, and forms one of the significant features of the work on blood of recent years.

4. Hydrostatic pressure.

The variations in hydrostatic pressure are to be treated as merely phenomena of a physical nature, yet they have their significance. The pressure of the two arms will vary as to their variations in height; the radial and the dorsalis pedis likewise. This is a source of error that is not often enough taken into account in investigations, and the neglect of which is cause of considerable error.

The actual mechanism of the contraction of the splanchnic fluid would be an interesting feature for discussion, and considerable work has been done in this line. Bunch (Jl. of Phys. XXIV p. 72) gives some important results and a considerable bibliography. (References to this will be made under the head of "Posture," and also under "A test of condition.")

FACTORS AND PROCEDURES PRODUCING A VARIATION IN BLOOD PRESSURE.

1. Changes in position. (Hydrostatic.)

If a limb is raised *passively* in a recumbent subject, the arterial pressure in it will fall directly proportional to the height raised. The venous pressure is equal in hand and foot while lying down, but the pressure in the foot will rise on standing from 15 m.m. Hg. to 135 or 140.

Another feature of the variations due to purely hydrostatic conditions will be found in the following experiment by Oliver. In a recumbent subject the pressure in one arm was taken and found to be 97 arterial and 10 venous; the other arm and both legs were then raised and the pressure recorded. It was found to be 102 arterial and 15 venous. A similar variation in the arterial pressure was found in an actual test by the soda manometer on the anterior tibial artery after amputation of the lower leg. The blood pressure rose up 40 m.m. upon raising the subject passively to a vertical position. From these facts we would conclude that the blood is subject to the ordinary physical laws and that pressure varies (with other conditions equal) with the height of the artery tested in relation to the rest of the body.

2. Posture.

The effect of posture has been studied by many observers, notably Hill, who with Barnard and Soltau give very succinctly the following results.

(1) The arterial pressure is the same in all the large arteries of the body while the subject lies horizontally.

(2) On changing from the horizontal to the vertical position the pressure on the upper part of the brachial artery remains constant or is slightly elevated.

(3) On changing from the horizontal to the sitting position the pressure in the arteries in the lower limbs becomes higher than the upper limbs by the height of a hydrostatic column of blood separating the two points of observation. If the body remains horizontal and legs become elevated, the converse result holds true.

(4) The pressure in the brachial artery is, in the change from the horizontal to the vertical position, maintained constant without noteworthy acceleration of the heart, so long as the subject is vigorous and un-

fatigued; with noteworthy acceleration of the heart when the subject is exhausted.

Hill's first result, that the pressures in all the large arteries are equal, is one that has often been denied and reaffirmed, and we are not in a position to present the final word, for it is most probable that it cannot now be said.

Oliver reaffirms Hill's statements, but he refers distinctly to mean pressure and not the maximum.

In considering the second item, the change in blood pressure due to changes in posture, we find there is considerable corroboration. Oliver finds 10 m.m. Hg. between lying and sitting. Schaffer and Goldwater find an average of 15 m.m. between the vertical and recumbent. Gaertner found 10 to 15; Grebner found no change; Marey found a decrease in pressure in the vertical, but his results, and those of Grebner, can be understood in the light of the other evidence.

This then can be accepted, that the arterial pressure in the arm is not lowered in the unfatigued but tends to be raised upon rising from the recumbent to the vertical position.

Hill explains the phenomenon of the rise in upper body pressure on rising from the recumbent to the standing position in the following way:

In the recumbent position gravity exercises but little influence on the distribution of the blood. In the standing position, however, the blood tends to collect in the lower part of the body, viz: the veins of the lower trunk and the legs.

The veins of the legs are constantly being emptied upward by the contraction of the skeletal muscles and the return of the blood is prevented by their valves. Only if the limb is kept motionless in the dependant position, will it become congested.

In the abdomen there is no muscular support save the muscles of the abdominal walls which serve to increase the intra-abdominal pressure, and to some extent prevent the collection of blood in the abdominal veins.

This collection of veins in the abdomen is however capable of containing the whole amount of blood in the body. A large proportion of the mass of blood would collect there merely from the effect of gravity when the standing position is assumed, if it were not held in control by the vaso contraction of the splanchnic area which is thrown into effect automatically. The failure of the contraction of area would mean the collection of the blood in this

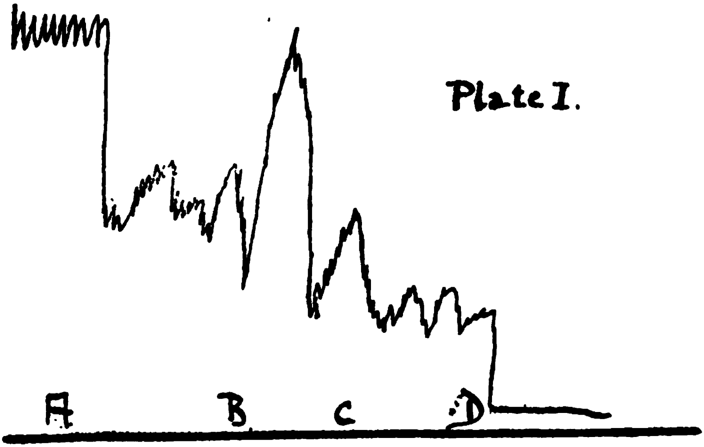

Plate I.

area, and the fall of blood pressure in the upper part of the body almost to the point of ex-sanguination.

This collection of blood in the splanchnic veins is primarily prevented by the working of the vaso-motor center—secondarily by the movements of respiration by their pumping effect, and the contraction and support of the abdominal walls.

The mechanism is under control of the vaso-motor center in the medulla, and is thrown into activity immediately on rising, so that the pressure in the upper body usually falls but momentarily, if at all. The effect of gravity usually is over-compensated for, and pressure is usually increased in the upper body upon rising.

In the fatigued, however, where the vaso-motor mechanism shares in the generally decreased tone, there is a failure of the blood pressure to rise in the upper body, or even to be maintained at all in severe cases when the erect position is taken. When this occurs the heart is unduly accelerated in an endeavor apparently to compensate for the lack of efficient working of the splanchnic mechanism by doing what it can to increase the blood pressure as it should be normally. It is given a lessened charge of blood and is enabled to empty itself in a shorter time.

In the unfatigued, therefore, on rising, the blood pressure rises while the heart-rate is but slightly increased; in the fatigued, however, the blood pressure falls while the heart-rate is considerably accelerated.

Hill has experimented with the dog raised to the vertical position. (See plate No. 1.)

The first of the tracing shows the normal pressure of the blood.

At "A" there is an abrupt fall due to the cutting of the splanchnic nerves.

" "B" the abdomen is compressed and the blood pressure runs up very high.

" "C" the abdominal wall is divided determining a further fall.

" "D" the thorax was opened robbing the splanchnic circulation of its last support.

The difference in the effect of posture on the blood pressure in the fatigued and in the healthy, as stated above, is of greatest importance. The upper body pressure in the fatigued is lowered, and in the fatigued is raised when the vertical position is assumed. As evidence of this, Hill cites interesting cases showing the effect of fatigue.

Condition	Position	Pressure	Pulse Rate
Exp. 1—Fresh in the morning	Horizontal	105—110—	62
	Vertical	120—	64
Fatigued in the evening	Horizontal	105—110—	72
	Vertical	105—110—	84
Exp. 2—Greatly fatigued, tendency to feel faint on standing, Morning, after dancing till 5.30—Three hours sleep	Horizontal	105—	66—
	Vertical	95—	96—
Next morning after nine hours sleep	Horizontal	96—	54—
	Vertical	105—	84—
Exp. 3—Woman recently confined	Horizontal	90—	88—
	Sitting	90—	128—

In considering these tables, we find that in the first case rising in the morning is accompanied by increased radical pressure without a marked change in the pulse. Evidently the splanchnic mechanism is in good working order. In the same case in the evening the blood pressure is maintained, but not raised, on rising to the vertical position, and we find a considerable increase of pulse rate. This shows a comparative inefficiency in the splanchnic mechanism, for the pulse rate, as it were, has come to the rescue helping out the diminished determination of blood. It is apparent that if the splanchnic mechanism had worked to the extent it did in the morning, with the increased heart rate of 12 more to the minute, we would have a greater increase in arterial pressure than we had in the morning, hence we must conclude that the nervous mechanism is wearied and unable to do its full duty.

In the case of the record taken after the severe and unusual exercise of dancing leading to acute fatigue, it will be noted that the blood pressure actually fell on standing, even though the heart rate was increased 30 beats in the minute. Here is apparent a nearly complete failure of the splanchnic mechanism accompanied by a vigorous endeavor on the part of the heart to make good the deficiency. The last record taken after nine hours' sleep shows that the splanchnic mechanism is in working order, but the heart is still called upon to do its share in the work; probably because the pressure was low in the first place.

It is very apparent, even in the case of mild fatigue, that, of the two factors which increase the blood pressure, the splanchnic mechanism and the heart rate, the splanchnic mechanism is the first one to be called upon and is probably the only one in the normal and unwearied. It is also the first one to be wearied and fail while the heart rate is then increasingly called upon to make up for its deficiency.

Hill has done further work in this line, repeating the experiments of Regnard (1868) and Salanthe (1877) on rabbits. These older observers found that when a rabbit was suspended with his head down it suffered but little inconvenience, but if suspended with his head up it died in 15 to 45 minutes. Hill found that when the rabbit (suspended head up) when nearly moribund had its abdomen compressed it was given a new lease of life, also if the abdomen were bound up before the beginning of the experiment it suffered little or no inconvenience. This would point to an extremely weak arrangement in the rabbit for maintaining the cerebral blood pressure.

Probably man is the animal whose apparatus of this sort is the best adjusted and the most able. It is also probable that this was one of the most important structural and physiological adaptions that nature had to make as the ancestors of man gradually rose to the erect position.

The mechanism therefore for the maintenance of the blood pressure in the standing position, is—

1. The contraction of the splanchnic area by the splanchnic nerves.

   Factors assisting No. 1.

   1—The pressure of the abdominal muscles.

   2—The aspiration of the thorax and the mechanical effects of the breathing movements.

2. The increase in heart rate. This occurs when there is a partial or absolute failure of the above mechanism.

(To be continued.)

THE TRANSITION FROM MEDIEVAL TO MODERN TIMES—CHAPTERS IN THE HISTORY OF PHYSICAL TRAINING.

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II. LOCKE AND ROUSSEAU.

The best of the Renaissance writers on education had begun to break away from authority and tradition, and with reason as a guide were groping their way toward a training better suited to the nature and present needs of man than any the past could supply. That their ideas gained currency throughout all Europe and the way was thus prepared for practical reforms is very largely due to the powerful influence exerted by two philosophers, *John Locke* (1632-1704) and *Jean Jacques Rousseau* (1712-1778), the former of whom published, "Some Thoughts on Education" in 1693, and the latter his "Émile, a Treatise on Education," in 1762.

Locke was an Oxford graduate and lecturer, had studied medicine and been physician in the household of Lord Ashley, afterwards Earl of Shaftesbury, and his chief work, the "Essay concerning Human Understanding," had already appeared (1690). His views, therefore, commanded attention at once, and whatever relates to the physical side of education came with the added weight of special knowledge. The author begins by dwelling at some length upon the hygiene of childhood. "Keep the body in strength and vigor," he says, "so that it may be able to obey and execute the orders of the mind. . . . A sound mind in a sound body, is a short but full description of a happy state in this world: he that has these two has little more to wish for; and he that wants either of them will be but little the better for anything else. . . . He whose mind directs not wisely will never take the right way; and he whose body is crazy and feeble will never be able to advance in it. . . . "

"Most children's constitutions are either spoiled, or at least harmed, by cockering and tenderness." They should not be too warmly clad or covered, winter or summer, and to prevent colds the boy's feet are to be washed every day in cold water, and his shoes made "so thin that they might leak and let in water whenever he comes near it." For safety and for health's sake he must learn to swim. He is to be "much in the open air, and very little, as may be, by the fire, even in winter." Clothing should never be made tight, especially about the breast, and the diet ought to be very plain and simple, with only small beer for drink, and that after eating. Serving his meals at irregular intervals will train him to endure hunger, if necessary. As regards fruit, "our first parents ventured paradise for it, and it is no wonder our children cannot stand the temptation, though it cost them their health." Some kinds are wholesome and may be taken freely before or between meals, but others are forbidden. Allow no sweetmeats—"one of the most inconvenient ways of expense that vanity hath yet found out; and so I leave them to the ladies." Nothing is more to be indulged children than sleep, but insist upon early rising, and let the bed be hard and rather quilts than feathers. All may be summed up in these rules: "Plenty of open air, exercise, and sleep; plain diet, no wine or strong drink, and very little or no physic; not too warm and strait clothing; especially the head and feet kept cold, and the feet often used to cold water and exposed to wet."

Further on, in the body of his work, Locke comes to what we should now call physical training proper. He recognizes that "besides what is to be had from study and books, there are other accomplishments necessary for a gentleman, to be got by exercise, and to which time must be allowed, and for which masters must be had. Dancing being that which gives graceful motions all the life, and above all things, manliness and a becoming confidence to young children, I think it cannot be learned too early. . . . As for the jigging part, and the figures of dances, I count that little or nothing, farther than as it tends to perfect graceful carriage. Music . . . wastes so much of a young man's time to gain but a moderate skill in it . . . that amongst all . . . accomplishments I think I may give it the last place. . . . Fencing and riding the great horse are looked upon as so necessary parts of breeding that it would be thought a great omission to neglect them: the latter of the two being for the most part to be learned only in great towns, is one of the best exercises for health which is to be had in those places of ease and luxury . . . and . . . is of use to a gentleman, both in peace and war. . . . As for fencing, it seems to me a good exercise for health, but dangerous to the life, the confidence of their skill being apt to engage in quarrels those that think they have learned to use their swords. . . . If . . . a man be to prepare his son for duels, I had much rather mine should be a good wrestler than an ordinary fencer; which is the most a gentleman can attain to in it, unless he will be constantly in the fencing school, and every day exercising . . . "

"I would [also] have him learn a trade, a manual trade; nay, two or three, but one more particularly. . . . Manual arts, which are both got and exercised by labor, do many of them by that exercise not only increase our dexterity and skill, but contribute to our health too; and especially such as employ us in the open air . . . " He "is not for painting;" but proposes "one, or rather both these, viz., gardening or husbandry in general, and working in wood, as a carpenter, joiner, or turner; these being fit and healthy recreations for a man of study or business."

The effects produced by Rousseau's educational romance, "Émile," upon the modern pedagogic world it would be difficult to exaggerate. The times were ripe for a revolt, and close upon the radical criticism of existing methods to which this theorist gave such convincing expression followed the actual reforms inaugurated by Basedow, Pestalozzi, and other innovators. It will be sufficient here to mention only a single phase of the education which this disciple of Locke would give to his imaginary hero. "The body," says Rousseau* in Book I, "must needs be vigorous in order to obey the soul: a good servant ought to be robust. . . . The weaker the body, the more it commands; the stronger it is, the better it obeys." Upon the subject of sleep, cold bathing, and the clothing suitable for young children his views are those of Locke.

In Book II we read: "If . . . you would cultivate the intelligence of your pupil, cultivate the power which it is to govern. Give his body continual exercise; make him robust and sound in order to make him wise and reasonable; let him work, and move about, and run, and shout, and be continually in motion; let him be a man in vigor, and soon he will be such by force of reason. . . . It is a very deplorable error to imagine that the exercise of the body is injurious to the operations of the mind; as if these two activities were not to proceed in concert, and the second were not always to direct the first! . . . These continual exercises, thus left wholly to the direction of Nature, not only do not brutalize the mind while fortifying the body, but on the contrary they form within us the only species of reason of which childhood is susceptible, and the most necessary at any and all periods of life. They teach us thoroughly to understand the use of our powers, the relation between our own bodies and surrounding bodies, and the use of the natural instruments which are within our reach and which are adapted to our organs. . . . In order to learn to think, we must . . . exercise our limbs, our senses, and our organs, which are the instruments of our intelligence; and in order to derive all the advantage possible from these instruments, it is necessary that the body which furnishes them should be robust and sound. Thus, so far is it from being true that the reason of man is formed independently of the body, it is the happy constitution of the body which renders the operations of the mind facile and sure . . . "

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*These quotations are taken from Rosseau's Émile, abridged, translated, and annotated by William H. Payne. New York, 1892.

" . . . Let him learn to make jumps, now long, now high, to climb a tree, to leap a wall. Let him always find his equilibrium; and let all his movements and gestures be regulated according to the laws of gravity, long before the science of statics intervenes to explain them to him. . . . When a child plays at shuttle-cock he trains his eye and arm in accuracy; when he whips a top he increases his strength by using it, but without learning anything. I have sometimes asked why we do not offer children the same games of skill which men have, such as tennis, fives, billiards, bow and arrow, football, and musical instruments. I have been told in reply, that some of these sports are beyond the strength of children, and that their limbs and organs are not sufficiently developed for the others. I find these reasons bad. . . . I do not mean that he shall knock the balls in our tennis-courts, nor that his little hands shall be made to hold the racket of an expert; but that he shall play in a hall whose windows are protected; that at first he use only soft balls; that his first rackets shall be of wood, then of parchment, and finally of catgut stretched to accord with his progress. . . . To spring from one end of the hall to another, to estimate the bound of a ball still in the air, and to send it back with a strong and steady hand, such sports do not befit a man but they serve to train a youth . . . "

" . . . I insist absolutely that Émile shall learn a trade," Rousseau continues, in Book III. This is not so much for the trade itself, as for overcoming the prejudices that despise it. "His apprenticeship is already more than half done, through the tasks with which we have occupied our time up to the present moment. . . . He already knows how to handle the spade and the hoe; he can use the lathe, the hammer, the plane, and the file; the tools of all the trades are already familiar to him. All he has to do in addition is to acquire of some of these tools such a prompt and facile use as to make him equal in speed to good workmen using the same tools, and in this point he has a great advantage over all others; he has an agile body and flexible limbs, which can assume all sorts of attitudes without difficulty and prolong all sorts of movement without effort. . . . All things considered, the trade which I would rather have be to the taste of my pupil is that of cabinet-maker. It is cleanly, it is useful, and it may be practised at home; it keeps the body sufficiently exercised; it requires of the workman skill and ingenuity, and in the form of the products which utility determines, elegance and taste are not excluded . . . "

As he approaches maturity (Book IV) Émile requires "a new occupation which interests him by its novelty, which keeps him in good humor, gives him pleasure, occupies his attention, and keeps him in training—an occupation of which he is passionately fond and in which he is wholly absorbed. Now the only one which seems to me to fulfil all these conditions is hunting. . . . Émile has everything necessary for success in it; he is robust, dexterous, patient, indefatigable. Without fail he will contract a taste for this exercise; he will throw into it all the ardor of his age; for a time, at least, he will lose in it all the dangerous inclinations which spring from idleness. Hunting toughens the heart as well as the body . . . "

Book V is concerned with the education of Sophie, Émile's future wife. " . . . Plato, in his Republic, enjoins the same exercises on women as upon men, and in this I think he was right. . . . Since the body is born, so to speak, before the soul, the first culture ought to be that of the body; and this order is common to both sexes. But the object of this culture is different; in one this object is the development of strength, while in the other it is the development of personal charms. Not that these qualities ought to be exclusive in each sex, but the order is simply reversed: women need sufficient strength to do with grace whatever they have to do; and men need sufficient cleverness to do with facility whatever they have to do. The extreme lack of vigor in women gives rise to the same quality in men. Women ought not to be robust like them, but for them, in order that the men who shall be born of them may be robust also. In this respect the convents, where the boarders have coarse fare, but many frolics, races, and sports in the open air and in gardens, are to be preferred to the home where a girl, delicately reared, always flattered or scolded, always seated under the eyes of her mother in a very close room, dares neither to rise, to walk, to speak, nor to breathe, and has not a moment's liberty for playing, jumping, running, shouting, and indulging in the petulance natural to her age; always dangerous relaxation or badly conceived severity, but never anything according to reason. This is the way the young are ruined both in body and in heart. . . . Delicacy is not languor, and one need not be sickly in order to please."

While Locke and Rousseau were urging the necessity of some sort of physical training in the scheme of education, and philologists and students of ancient art kept alive the knowledge of Greek gymnastics, a number of medical writers had been directing attention to the importance of bodily exercise in the restoration and preservation of health. In London in 1704 *Francis Fuller* (1670-1706) published "Medicina Gymnastica: or a treatise concerning the power of exercise with respect to the animal œconomy, and the great necessity of it in the cure of several distempers." A German translation appeared in 1750, after the book had already passed through seven editions in England. In 1701 a distinguished German physician, *Friedrich Hoffman* (1660-1742), referred to several times by GutsMuths in his "Gymnastics for the Young," published in Latin an essay "On motion, the best medicine for the body;" and eighteen years later several of his articles on the hygienic influence of exercise appeared at Halle under the title "The incomparable advantages of motion and of bodily exercises, and how they are to be employed for the preservation of health." *Zückert,* a Berlin physician quoted by Basedow, in discussing the hygiene of infancy and childhood (1764 and 1765) mentions various bodily exercises, such as wrestling, dancing, riding, vaulting, bowling, skating, and swimming. A famous physician at Lausanne, *Simon André Tissot* (1728-1797), published first in Latin (1766) and then in French (1768 and later) a book on the health of the literary class, in which he recommends games and gymnastics for the youth of both sexes. A German translation was ready in 1768, and other editions in that language followed, together with several in English and one in Swedish. Another well-known French physician, *Clement Joseph Tissot* (1750-1826), published in Paris in 1780 his "Medical and Surgical Gymnastics; an essay on the use of motion and of different exercises of the body in the cure of disease." Translations of the work were printed in Leipsic (1782) and Stockholm (1797).

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SIMON ANDRE D. TISSOT. — Upon his appointment to the chair of medicine at the College of Lausanne Tissot delivered an inaugural discourse "De valetudine litteratorum" (Lausanne, 1766). This was published in French as "Avis aux gens de lettres et aux personnes sédentaires sur leur santé, trad. du latin" (Paris, Herissant fils, 1767. 12°, pp. viii, 119). It was later corrected by the author and published under the title "De la santé des gens de lettres" (Lausanne, F. Grasset & Cie.; and Paris, P. F. Didot le jeune, 1768. 12°, pp. xv, 246). Other editions bearing the same

title appeared at Lausanne in 1769, 1770, 1772, and 1788; at Lyon in 1769 (12°); and a "nouvelle édition, augmentée d'une notice sur l'auteur et de notes, par F.-G. Boisseau," in Paris (J.-B. Baillière) in 1825 and 1826 (16°, pp. xvi, 238).

S. A. D. TISSOT, der Arzneygelahrtheit Doctor und öffentlicher Lehrer zu Lausanne, der Königl. Gesellschaft der Wissenschaften zu London, der Medicinisch-Physischen Akademie in Basle, und der Oekonomischen Gesellschaft in Bern Mitglied, *von der Gesundheit der Gelehrten.* Aus dem Französischen übersetzt von Joh. Rud. Füesslin. Zürich, Füesslin und Compagnie, 1768. 16°, pp. 263. Later editions are said to have appeared in Zürich in 1769 and 1775. The German translation was also published in Leipzig (J. G. Müller) in 1768 (12°, pp. xiv, 190) and 1775.

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A PRACTICAL PHOTOMETRIC METHOD FOR CASE RECORD.

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The photographic method of recording deformities has been used since dry plate photography first made it available for amateur use. Many, however, have been deterred because the control of the camera presented seemingly insurmountable difficulties, and the expense of development and printing and the difficulties of properly labelling and caring for plates were considerable. To overcome these defects by insuring convenience and accuracy of handling and economy of time, expense and storage, the following method and apparatus have been devised by the writer and carefully tested by long practical use,* but are now for the first time described.

The method is briefly as follows:

1. To adjust the focus of the lens for such selected image sizes of the subject as will give the desired ratios of size between subject and image (such as 6=100, 10=100, 14=100, 20=100, etc.) and to mark these foci and the corresponding distances of the subject from the camera on the adjusting part of the camera or lens so that the focus can be instantly secured by merely setting an index to a mark and adjusting the subject's distance by means of a graduated tape or knotted string, and the photograph taken in the exact ratio without any delay for focusing or other adjustment.

2. To make the camera so that it will take three or four photographs of the same individual in different aspects upon the same plate, thereby avoiding confusion in labelling and loss of identity of the several photographs.

3. To photograph with each subject an identifying number which absolutely identifies every photograph.

4. To make a transparent scale based on the ratios of subject size to the image size selected for records, by which the photo-

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*The first multiple camera, a three-phase and the first automatic labelling device were designed and made in 1888 by the writer for use in photographing the students in the Hemenway Gymnasium, Harvard University, where it has since been in constant use.

graphic images may be measured as to any dimension, asymmetry or deformity, directly in inches or centimeters, as if one were measuring the subject himself, by the application of the scale to the face of the photograph.

The lens. — Although expensive modern lenses are the most satisfactory, yet a rapid rectilinear lens of the cheaper sort, such as a Darlot, will ordinarily give thoroughly satisfactory results, provided that one does not need to get a large image in a poorly lighted and cramped room.* Unless one is very familiar with the working values of different kinds of lenses, however, it is wisest to test them under the conditions of use before making a choice for purchase.

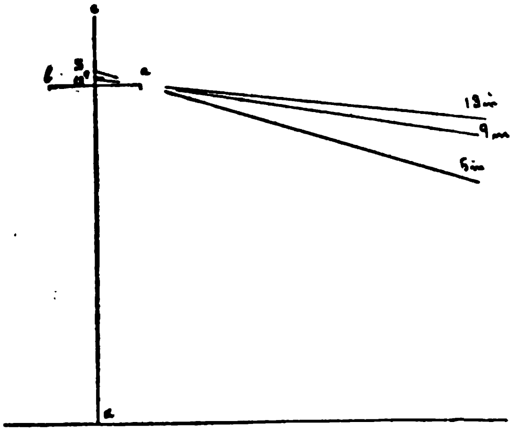

Fig. 1. Projection angles of lenses of focal lengths, 5 in. 9 in. and 13 in., respectively, showing projection of shoulder (*a*) against anterior posterior vertical mid plane (*cd*) in photographing a subject 60 in. in height with the camera at mid height. a-b = shoulders, c = top of head. Subject standing with his side to the camera.

It is important to use a lens of the longest focus possible in the space available for photographing if the room is short, since it will give a sharper large image of the subject with full aperture than one of shorter focus, and hence permit the shortest exposure. If the distance from the camera to the object is necessarily short and large photographs are desired, it may be necessary to purchase an expensive lens of shorter focus which will work with wide aperture since a cheaper lens may not give satisfactory results when strained in this way. The longer focus lens is also to be preferred for getting a good perspective and the proper relation of projecting parts. This is shown diagrammatically in Fig. I.

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*The Darlot with a slip collar permitting adjustment for focus by movement of the lens itself is so convenient for use in this method that it has been adopted for illustration. (See Fig. 4.) Any lens can be fitted to a slip tube which will serve the same purpose and at the same time save the necessity of making the camera box adjustable.

The following table of focal lengths will assist in deciding upon the lengths of focus of lenses most convenient for given conditions. It gives the distances required for a full length view only, since larger views of parts of the body are taken at less distances and hence do not count in deciding room capability for photographic purposes:

Focal lengths of lenses.	Distances of object.	Lengths of image of individual 68 in. tall.	Distances* of lens to plate.
7 in.	54.6 in.	10 in.	8.0 in.
	66.5 "	8 "	7.8 "
	86.3 "	6 "	7.6 "
	102.2 "	5 "	7.5 "
	126.0 "	4 "	7.4 "
8 "	62.4 "	10 "	9.2 "
	76.0 "	8 "	8.9 "
	98.7 "	6 "	8.7 "
	116.7 "	5 "	8.6 "
	144.0 "	4 "	8.5 "
9 "	70.2 "	10 "	10.3 "
	85.5 "	8 "	10.1 "
	111.0 "	6 "	9.8 "
	131.4 "	5 "	9.7 "
	164.0 "	4 "	9.5 "
10 "	78.0 "	10 "	11.5 "
	95.0 "	8 "	11.2 "
	123.0 "	6 "	10.9 "
	146.0 "	5 "	10.0 "
	180.0 "	4 "	10.6 "
11 "	85.8 "	10 "	12.6 "
	104.5 "	8 "	12.3 "
	135.7 "	6 "	12.0 "
	160.0 "	5 "	11.9 "
	198.0 "	4 "	11.7 "
12 "	93.6 "	10 "	13.8 "
	114.0 "	8 "	13.4 "
	148.0 "	6 "	13.1 "
	175.2 "	5 "	12.9 "
	216.0 "	4 "	12.8 "

Table for determination of required focal lengths of lenses for given room distances and image sizes. — Adapted from P. Brosig. Am. Ann. Photog., 1900, p. 309.

***These distances must be considered as approximate, owing to variations in lenses.**

In deciding the question of available room length it is necessary to determine, preferably experimentally, the position for best illumination of the subject and the direction in which the camera must be placed in order to secure a photograph which will give the best modeling of the body. Having determined these two points, position of subject and of camera, the distance between them becomes the "available distance" of our problem and we are in a position to decide what focal length of lens is best adapted to secure good images. It not infrequently happens that only one-half or one-third of the room length or width can be used and that the camera must be placed so that it will look into the room containing the subject through a doorway from another room.

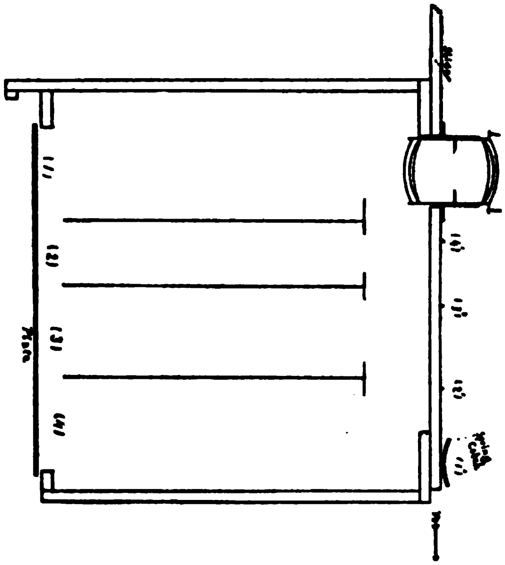

FIG. 2. Diagrammatic section of a four-phase multiple camera. (1), (2), (3), (4), portions of plate occupied by the successive photographs. (1), (2), etc., ⊓ on lens slide for stopping lens in exact position for corresponding photographs. The plate is 5 x 8 in. lens, Darlot No. 2. Scale 1-4 in. = 1 in.

The multiple camera. — After settling the lens problem it is necessary to determine the range of focal length ("back focus" or distance from flange to ground glass) of the lens for the largest and smallest images required. The box depth, Fig. 2, must be made equal to the shortest back focus when the lens is pushed home into its collar, less the thickness of wood used for the front of the box, the thickness of the slide carrying the lens and the depth of the plate holder to the film surface of the plate. The breadth and height of the camera may either be made large enough to inclose the plate holder or may be made 1-2 inch smaller each way by fitting the box flush to the edges of the plate holder.

The dimensions with a scale plan of the camera can then be given to a carpenter who will "gang-saw" the pieces of 1-4 inch mahogany together, so as to make a stout and at the same time light box. The front may be fitted with small brass hooks so as to permit easy removal for adjustment of the partitions. The sliding strip of mahogany to which the lens is fastened is best carried between two narrow guide strips of mahogany by means of 1-4 inch brass splines and is stopped at the center of each of the four compartments (into which the box is divided) by a spring catch slipping over the end of a pin in the slide. The partitions are of thin blackened wood each carrying a 3-4 inch strip of blackened wood, at right angles on the front end to prevent the light from the lens getting into the adjacent compartments. They may be kept in place either by binding nuts on long screw wires which pass through their corners and rest lightly against the sides of the camera box thus uniting the partitions into one easily removable framework, or by pieces of doweling similarly treated. Vertically the partitions themselves should fit loosely so as to remain in place. The screw wire and nuts permit adjustment of the spaces, and the whole may be removed and the entire plate used for one large photograph in a moment's time, the conditions of focus, of course, remaining the same.

For use as a multiple camera an ordinary collapsing camera box is not available because of the difficulty of properly providing for the partitions, and for the further reason that on account of the wide aperture of lens used and the required accuracy of image size the focal adjustment must be more accurately made than is possible with the ordinary camera box. It is far better to have the box so made as to be useful for no other purpose and hence to be always instantly available for case photographing.

Since by this method no subsequent focusing is required, it is unnecessary to provide a regular ground glass in case the box used does not have one. Any glass will serve, provided that it

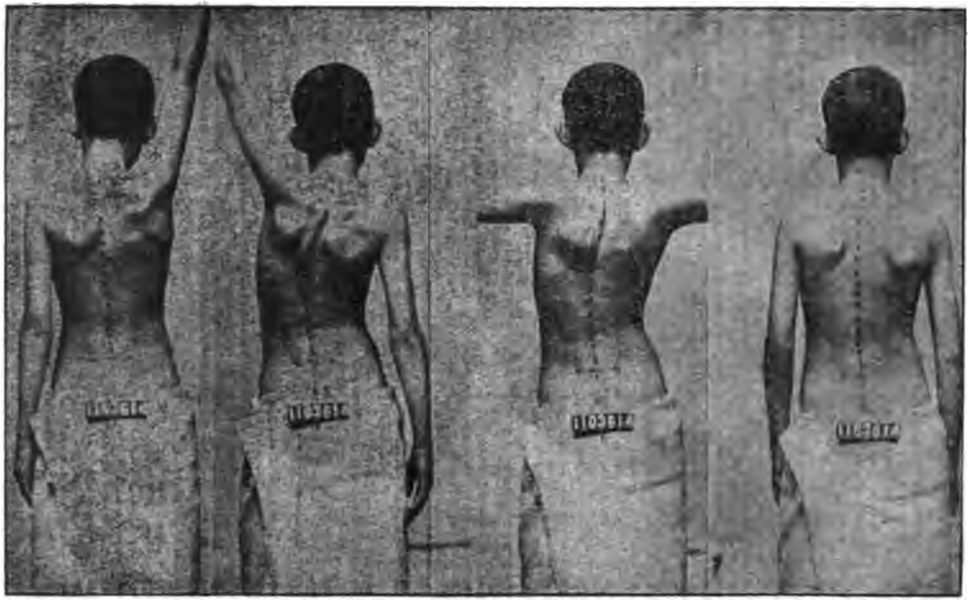

FIG. 3. Photographs taken with four-phase multiple camera showing utilization of whole plate surface, plumb line for vertical reference, automatic numbering and dating (November, 1903, No. 614) and method of marking back. (2-3 full size.)

is coated with some substance which will make it milky so as to receive the images. Beeswax rubbed on the side of the glass toward the lens, a thin coating of uncooked starch paste dried on, or even better an undeveloped gelatine plate will give a fair image.

The ground glass or its substitute, when used for focusing, should be exactly in the plane of the plate in the plate holder. To obtain this position the plate holder may be used if the central partition is removed, or strips of wood or pasteboard of the requisite thickness may be glued upon the face of the glass itself at the ends.

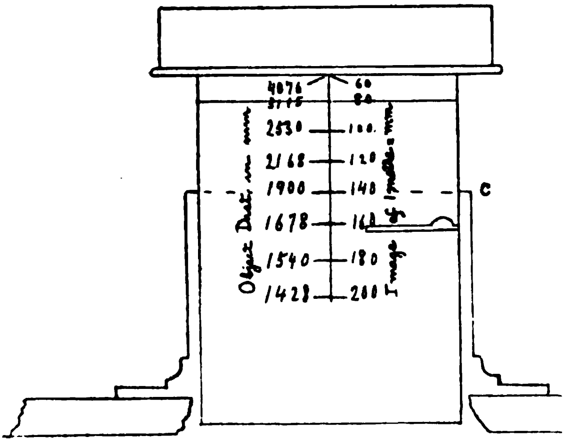

FIG. 4. **Lens tube graduated for distances of object and sizes of image of one meter. The edge of the collar forms the index set for a distance of 1,900 mm. giving an image of one meter = 140 mm. = 140-1,000 or 14% of size of subject. (1-2 natural size.)**

Adjusting the focal distances. — To prepare for the systematic focusing of the lens, drive three 2-inch wire nails lightly into a strip of wood at 1-2 meter intervals and in a vertical position. Place this strip on a table at right angles to the axial line of the camera, and set behind each nail the flame of a Christmas candle with a piece of oiled paper between them, so that the nails will show black on a bright ground. The camera should now be set at such distances from the nails as will give exactly the desired lengths to the images of the meter (or half meter) when focused with full aperture of lens; for this purpose a millimeter scale should be used and repeated trials made until exact coincidence is obtained. When this is accomplished in exact focus, measure and record the distance from the front of the camera box to the middle nail and mark the lens tube* by drawing a sharp knife carefully along the edge of the collar. In this way the image values and object distances were obtained for the lens positions shown engraved on the lens tube in Fig. 4. It is best to use a magnifying glass to test the sharpness of the focus on the ground glass and to be sure that the line of sight is perpendicular to the glass surface in reading the distances between the nail images, to avoid the errors which may be made if one carelessly measures in the line of emergence of the light itself, as may easily be done if the coating on the glass is too transparent.

A proportional scale for measuring photographs. — Having prepared the table of image sizes as above, one may construct a universal scale for image measurement as shown in Fig 5. First draw with the utmost precision a straight base line (*a b*) of the length of the longest meter image (or, for greater exactness, of double that length) and erect a perpendicular (*b c*) at one end exactly equal to the longest meter image length. From the upper end, *c*, of this perpendicular draw as carefully as possible a straight diagonal (*c a*) to the remote end of the base line. If one now draws intermediate perpendiculars touching the base line and the diagonal at distances on the base line proportional to the meter image lengths measured, these lines will give the meter images in position for ready multiple sub-division, since if the first perpendicular be divided into ten equal parts by means of dividers† and diagonals be drawn to each division, all the perpendiculars will be divided to tenths and each division will stand for 100 mm. or one decimeter for its own scale. These may be subsequently divided again into fifths or tenths as shown, thus giving 10 mm. or 1 cm.

This universal scale cannot be used directly on the photographs to advantage, but from it scales similar to Fig. 6 may be made

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*In an ordinary camera these marks can be made upon the bottom portion over which the moving front or rear of the camera passes as is sometimes done for a simple focusing scale, but it is not nearly so satisfactory a method.

†This can be avoided by using the divided ruler or tape when it is 10 cm. or any multiple of it; otherwise by prolonging the base line proportionately it is possible to erect the perpendicular which may be divided by the divisions on the scale.

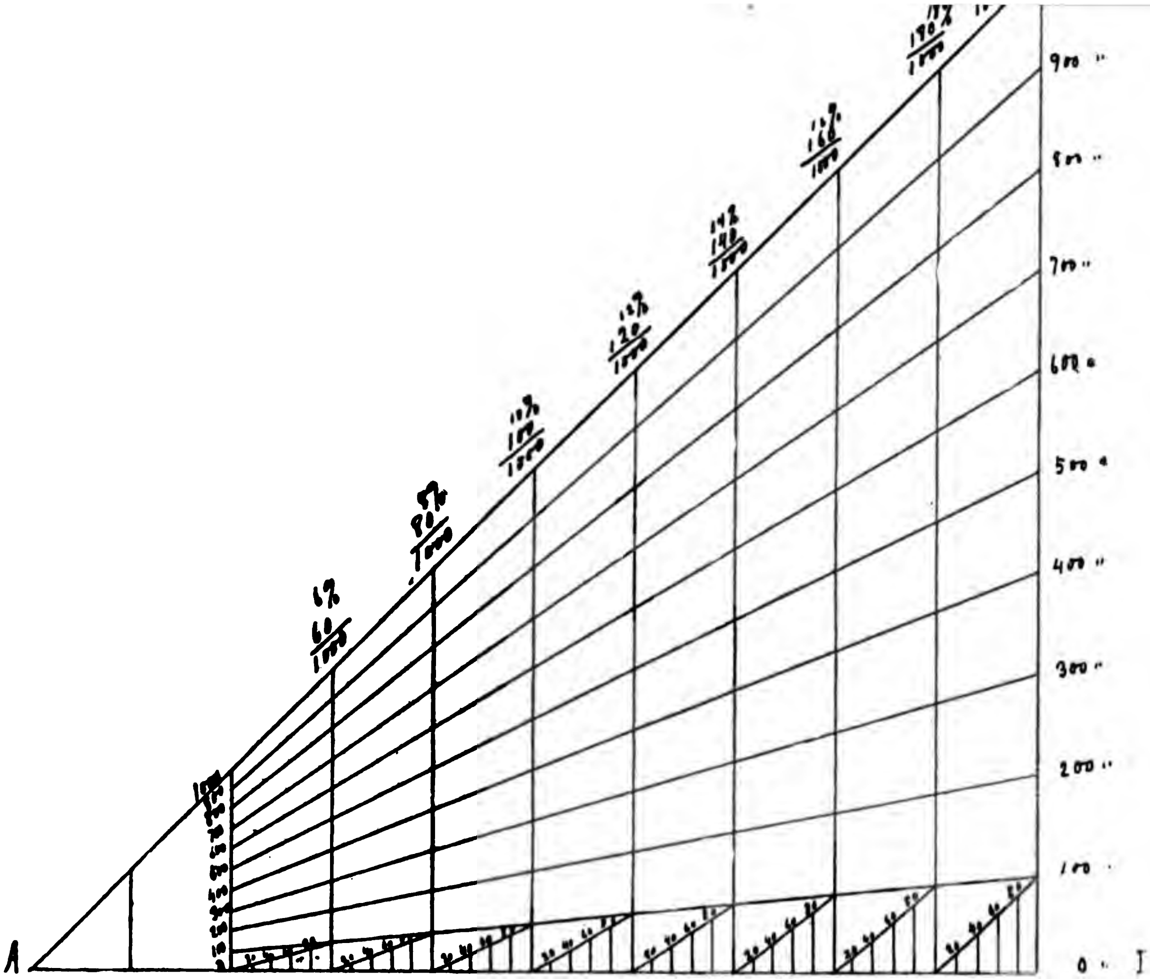

FIG. 5. Scale plan of proportional image sizes of one meter for all distances of object: for lens "D2." (2-3 full size.)

for standard image sizes. For this purpose clear celluloid 20-1,000 to 15-1,000 inch in thickness is best, and the graduations may be scratched with a needle point.

These scales are useful for all measurements on negatives or prints and have proved themselves superior to any of the methods tried by me previous to devising this. They have the great advantage of being instantly adjustable to any part of the body of which the measurements are required. Thus lengths and breadths are readily measured as well as depths of curves, lengths of chords of curves, inclination of the body from a plumb line, deviation of the spine at various levels from the mid-line between cleft of buttocks and the Vertebra Prominens and other measurements which on the human body cannot otherwise be obtained without elaborate apparatus and much expenditure of time.

Method of measuring with the proportional scale. — The method of applying the scale to a photograph for the measurement of a particular dimension is illustrated in Fig. 5 in which the scale is applied for the measurement of the line *a b*. The end *a* is adjusted to the nearest division of the main scale (in this case 800) which will permit the end *b* to overlap the zero on to the fractional scale. This fractional reading (70) is then added to the main reading (800), giving the total length (870).

In practice the great advantages of this method over that of Oehler,* now rather commonly employed, are that the scale can be so adjusted to the photograph that oblique as well as rectangular measurements can be made, and that the scale may be made to tally with the beginning of any desired measurement, so that fractional parts need to be measured at one end only. The importance of the former of these advantages is quickly realized in practice since few dimensions are strictly horizontal or vertical; of the latter, since it is impossible to so adjust the screen as to make the zero line tally with even one fundamental point or line on the subject. Furthermore, the meshwork of lines in the Oehler method is extremely confusing to one trying to get a comprehensive and accurate impression of the photographed figure. The thread screen is, moreover, very delicate and thereby easily injured and somewhat costly and awkward of adjustment.

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*Zeitsch. f. Orthop. Chir. Bd. II, 1893, p. 169-173. This method is to photograph the subject behind a thread screen whereby the entire surface of the photograph is covered with 2.5 cm. squares formed by the intersection of the black cross threads.

This method of measuring photographs by means of a proportional scale can be applied to any photograph whose size ratio to its original is known.

A simple method of making a measuring scale for one distance of the subject when the scale and not an exact size ratio to the subject is required and an ordinary camera is used, is to determine the distance and the focus which will give the size of image desired. This distance is then measured, or an inelastic string of the exact length is provided for use in reproducing it, and the focal point is marked on the focus adjusting part of the camera.

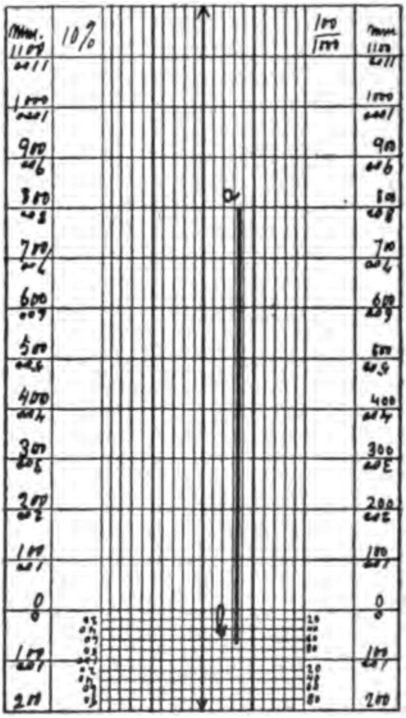

Fig. 6. Transparent measuring scale of celluloid for ratio method: apply scale as shown so that one end of line, as *a-b*, coincides with the cross line whose distance from (0) is just short of its total length, the other end will then extend by the zero line (0), thus giving the fractional excess (70), length *a-b* = 870 mm. (2-3 natural size.)

A strip of paper or a board is then graduated with heavy ink markings in either inches or centimeters to a length of from three to five feet. This is photographed at the exact distance of the subject as previously determined. If the negatives are to be used for measurement the scale may be prepared directly from the negative, but if paper prints are to be used it is wiser to make the scale from a print treated in the same manner as the case photographs. This is necessitated by the fact that velox paper, for example, shrinks 1% in all directions when after development it is allowed to dry spontaneously and is not burnished, and other papers behave somewhat similarly depending upon the structure of the paper, the character of the film and the method of treatment. Since the glass support of the negative prevents change of size in its film, it is preferable to use the negative for accurate work, especially as it is also much more economical so to do.

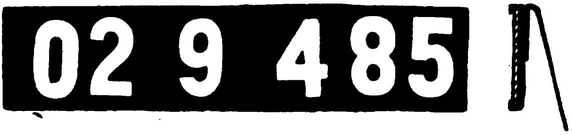

Fig. 7. Holder for date and number cards. Each figure is on a separate slip. (Reads No. 485, September, 1902.)

Automatic labeling of negatives. — White-gummed numerals one inch in height are sold in packages of ten each. These are moistened and stuck carefully upon a heavy rough surfaced dark photographic mount board cut into pieces of the right size.

The holder is made of sheet metal as shown in Fig. 7 and receives the number cards at the ends. A pin on the back serves to attach the device to the clothing of subject. The holder is coated inside and out with a dead black enamel. To simplify classification by using the same number always for each individual it is convenient to date the photographs by adding the proper numbers as is done, for example, in the figure which reads "September, 1902, No. 485." The holder should be six inches long and five series of number cards 0 to 9 are necessary beside the year cards, '02, etc. This will give a complete series up to 999 cases.

Plates or films. — Rolled films are very attractive because of their lightness and small bulk and for the reason that they can be superposed in the developing tray and several developed at once. This apparent advantage is, however, neutralized by the fact of their greater delicacy, by their greater expense, by the delay in development of the entire roll of twelve or more exposures until all are used and by their change of size in drying.

Plates, however, have one property lacking in all substitutes, that of furnishing a film support which is practically a true plane and of absolute rigidity and unchanging dimensions thus enabling one to measure the image on the negative with perfect confidence in its accurate ratio to the subject photographed.

Plates are more durable than rolled films both when unexposed or exposed and when developed and dried as negatives. They are more readily filed away for reference and when one is sought it is found with little disturbance of the others and can easily be replaced again when it is no longer needed. This is a very important item when one is using photography for case record, especially when the negative itself is used for study as it should be for greatest accuracy and economy.

Plate holders. — Light, strong plate holders should be selected with special reference to the particular device to be used for retaining them against the end of the camera box and to the ease with which they can be filled and emptied by feeling in the dark room. No plate holder without stout wooden sides should be considered for an instant, since they will not stand the hard usage which may unavoidably come to them. One should try manipulating the sample holder with the eyes shut,* and unless it can be done quickly and safely without touching the face of the plate except at the edges either in filling or emptying it should be unhesitatingly rejected.

Shutter. — Any shutter may be used, but one of simple construction is most convenient. All that is needed is that it should open and shut positively so that the exposure may be perfectly controlled from a distance. Automatic shutters which give measured exposures when released, as the Bausch and Lomb, though excellent, are expensive. It is sometimes convenient to have the rubber tubing long enough to control the shutter from the position of the subject, especially in photographing children.

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*Plates should be handled in the dark except when one is developing them, and then they should be kept as nearly in the dark as possible in order to get the full advantage of the sensitiveness of the film and to avoid the "developing" fog which in very short exposures may seriously diminish the value of the plate.

Exposure. — The ordinary exposure varies from one to six seconds, according to light, diaphragm, subject, etc. It is seldom that light enough can be secured in hospitals or offices to permit a shorter exposure than two seconds, but even in the case of a restless child, this is usually found to be sufficiently short. Six seconds is as long an exposure as is permissible even for older children or adults when standing, since it involves a certain amount of body swaying, which cannot be controlled without a back rest. The use of a rest is objectionable for the reason that it leads to greater or less distortion of the body, in that each subject adjusts himself to the rest and consequently is not in normal posture. For other than standing postures, rests are both less objectionable and less necessary. Too short exposures must be avoided owing to the difficulties of developing the plate.

The length of exposure can be conveniently measured by means of a simple pendulum, consisting of any small weight suspended by a string from some fixed point. The distance from the center of the weight to the point of bending of the string at its upper end should be for a one-second swing 39.1 inches. for a half second, 9.78 inches.

Automatic shutters can be adjusted for the proper exposure and then need no attention except to set and release them at the proper times for each exposure.

Instantaneous photographing has small use indoors, owing to the weakness of illumination and consequent difficulty of successfully developing the plate.

Camera stand. — A stand is a not unimportant aid in photographing cases. In emergencies it is possible to use a table or other support but for routine work a good stand is essential. The ordinary folding tripod is useless on a polished floor and is awkward and treacherous in all indoor work; the studio stands are expensive as well as clumsy and take up considerable room. There is, however, now on the market, a stand which in structural design combines the advantages of both in that it has a small folding tripod base which, however, becomes rigid when opened out, a central vertical extension giving elevations, of from two and one-half to five feet, and a tilting top. It is excellent for semi-portable use owing to its lightness, strength and compactness when folded and to the quickness with which it may be adjusted. Its chief disadvantage is its tendency to vibration when the camera is set at a high level, but this it shares with most portable stands. It can be neutralized by leaning a light pole or other object against it, or by wedging, lightly, a brace obliquely from the camera to the floor or wall.*

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*The stand is sold under the name "Daisy" for $2.50 in the photographic stores.

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TABLE III

BIC INCHES TO LITRES

IN		in		L	I	L	I	L	I	L
0.0	4	6.1		1.64	200	3.28	300	4.92	400	6.55
1	7	1		7	2	3.31	2	5	2	9
2	9	6		1.70	4	4	4	8	4	6.62
3	2	9		4	6	8	6	5.01	6	5
4	4	1		7	8	3.41	8	5	8	9
5	7	1		1.80	210	4	310	8	410	6.72
6	9	5		4	2	7	2	5.11	2	5
7	42	1		7	4	3.51	4	5	4	8
8	4	2		1.90	6	4	6	8	6	6.82
9	7	1		3	8	7	8	5.21	8	5
1.0	9	6		7	220	3.61	320	4	420	8
1	52	9		2.00	2	4	2	8	2	6.92
2	4	1		3	4	7	4	5.31	4	5
3	7	1		6	6	3.70	6	4	6	8
4	60	1		2.10	8	4	8	7	8	7.01
5	2	1		3	230	7	330	5.41	430	5
6	5			6	2	3.80	2	4	2	8
7	7	1		2.20	4	3	4	7	4	7.11
8	570			3	6	7	6	5.51	6	4
9	2	1		6	8	3.90	8	4	8	8
2.0	5			9	240	3	340	7	440	7.21
1	7			2.33	2	7	2	5.60	2	4
2	580			6	4	4.00	4	4	4	8
3	2			9	6	3	6	7	6	7.31
4	5			2.43	8	6	8	5.70	8	4
5	8			6	250	4.10	350	4	450	7
6	1590			9	2	3	2	7	2	7.41
7	3			2.52	4	6	4	5.80	4	4
8	5			6	6	4.20	6	3	6	7
9	8			9	8	3	8	7	8	7.51
3.0	1600		0	2.62	260	6	360	5.90	460	4
1	3		2	5	2	9	2	3	2	7
2	5		4	9	4	4.33	4	6	4	7.60
3	8		6	2.72	6	6	6	6.00	6	4
4	1610		8	5	8	9	8	3	8	7
5	3		0	9	270	4.42	370	6	470	7.70
6	5		2	2.82	2	6	2	6.10	2	3
7	8		4	5	4	9	4	3	4	7
8	1620		6	8	6	4.52	6	6	6	7.80
9	3		8	2.92	8	6	8	9	8	3
4.0	6		0	5	280	9	380	6.23	480	7
1	8		2	8	2	4.62	2	6	2	7.90
2	1631		4	3.02	4	5	4	9	4	3
3	3		6	5	6	9	6	6.33	6	6
4	6		8	8	8	4.72	8	6	8	8.00
5	8		0	3.11	290	5	390	9	490	3
6	1641		2	5	2	9	2	6.12	2	6
7	3		4	8	4	4.82	4	6	4	8.10
8	6		6	3.21	6	5	6	9	6	3
9	8		8	4	8	8	8	6.52	8	6

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REPORTS OF THE COUNCIL.

MEETING OF THE NATIONAL COUNCIL OF THE AMERICAN PHYSICAL EDUCATION ASSOCIATION.

October 7th, 1905.

Present: Drs. Gulick, Arnold, Savage and Meylan, and Mr. Hillyer.

The minutes of the previous meeting having been printed in the REVIEW, it was voted to dispense with reading them.

The Secretary presented the following report:

Financial Report of Secretary's Office from June 1st to September 30th, 1905.

Received.		Paid.	
Cash balance June 1st..	$60.82	Sign for Turn Fest....	$2.50
Dues	107.00	Express on Reviews...	.90
Subscriptions	7.75	Postage	14.27
Back Nos. and Reprints	10.72	Rebates to local societies	24.00
Deficit September 30th.	48.67	Credited to Publication Fund	59.97
		Clerical help account ..	133.32
	$234.96		$234.96

The report was accepted.

The Secretary presented the returns of the election of two additional members to the Executive Committee, as follows:

Dr. George L. Meylan	62
Dr. T. D. Wood	36
Mr. Emanuel Haug	33
Dr. George J. Fisher	27
Dr. William Skarstrom	5
Miss Mary T. Bissell	4
Dr. Henry L. Taylor	3
Dr. Augusta Requa	2

Dr. Meylan and Dr. Wood having received the largest number of votes* were declared elected by President Gulick.

[*It may surprise members who are familiar only with conventional constitutional and parliamentary methods, that twenty-two members of the Council should be able, unconsciously (for no notice was given the voters that such power was conferred upon them), to so multiply their "votes" as to make up the number exhibited in the above table. The

In view of the small attendance at the meeting, it was voted to have the election of officers and editor conducted by mail, and the Secretary was instructed to send out a mail vote for President, Treasurer and Secretary to the National Council, and Editor of the REVIEW.

The Secretary presented a bill for additional sundry expenses for the convention last April. It was voted to approve the bill.

The following persons were elected to membership in the Association.

Mr. H. E. Braun, Quincy, Ill.
Miss Mary E. Elwell, Pueblo, Col.
Mr. William H. Flood, Jersey City, N. J.
Capt. Alan Foster, Edinburg, Scotland.
Mr. Jean Marius Gelas, Ithaca, N. Y.
Miss Margaret Giddings, Denver, Col.
Miss Addie Parker Jackson, Plainfield, N. J.
Mr. James Condon Jones, Athens, Ohio.
Mr. John A. Lane, Brookline, Mass.
Miss May G. Long, Mason City, Iowa.
Miss Irma A. Moeller, Milwaukee, Wis.
Miss Jessie C. Mygatt, 357 W. 97th St., New York City.
Mr. James Naismith, Lawrence, Kan.
Miss Luella A. Palmer, 235 E. 18th St., New York City.
Mr. Emil Rath, Pittsburg, Pa.
Miss Elsie E. Schwartz, Omaha, Neb.
Miss Anna F. Strickland, 207 W. 107th St., New York City.
Miss Fannie E. Wolff, 252 W. 26th St., New York City.
Miss Helen Woodsmall, Colorado Springs, Col.

GEO. L. MEYLAN,
Secretary.

MEETING OF THE EXECUTIVE COMMITTEE OF THE NATIONAL COUNCIL OF THE AMERICAN PHYSICAL EDUCATION ASSOCIATION.

November 15th, 1905.

Present: Drs. Gulick, Savage and Meylan, Mr. Hillyer and Mr. Haug.

Secretary sent out a notice requesting members to vote for 1st, 2nd, 3rd, 4th and 5th choice, and decided to count the first choice in the replies for five, the 2nd choice 4, 3rd choice 3, 4th choice 2, and 5th choice 1, in making up the list for deciding the election. While this is a common method of giving weight to winners of 1st, 2nd and 3rd place in athletic events, it seems hardly a proper method of counting votes, since these values do not represent the relative importance of the position upon a vote, unless the voter consciously arranges his vote in accordance with such choice. See pp. 316.—EDITOR.]

The minutes of the last meeting were read. It was voted to amend the next to the last paragraph to read, "In view of the small attendance at the meeting, it was voted to have the election of officers and editor conducted by mail, and the Secretary was instructed to send out a mail vote for President, Treasurer and Secretary to the National Council, and Editor of the REVIEW, in accordance with the plan adopted by the Council at the June meeting."* The minutes as amended were approved.

The Secretary presented the following report.

Financial Report of the Secretary's Office for the Month of October, 1905.

Received.		Paid.	
Dues	$32.00	Moving of archives and stock of Reviews	$10.00
Subscriptions	9.00	Office furniture	3.50
Back Nos. and Reprints	3.30	Express	.45
Deficit October 31st	105.86	Rubber stamps	.95
		Rebates to local societies	28.00
		Credited to Publication Fund	14.30
		Postage	10.96
		Clerical help account	33.33
		Deficit to balance Sept. Acct.	48.67
	$150.16		$150.16

The report was accepted.

The Secretary presented the report on the mail vote for officers of the Council, and Editor of the REVIEW, as follows:

For President: Dr. Gulick, 27; Dr. Meylan, 15; Dr. Wood and Dr. Arnold, 9 each, and 14 scattered points.

For Secretary: Dr. Meylan, 30; Mr. Hillyer, 9; Dr. Wood, 4; 23 scattered points.

For Treasurer: Mr. Haug, 24; Mr. Hillyer, 9; Dr. Arnold, 6; 28 scattered points.

For Editor: Dr. Fitz 38; Dr. Gulick, 9; Dr. Leonard, 7; and 16 scattered points.

Dr. Gulick having received the largest number of votes for President was declared elected. Dr. Meylan having received the

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[*The official minutes of the June meeting sent to members of the Council contain no record of such a plan, and neither the constitution, by-laws nor common parliamentary practice permit such a method of counting votes for officers. See pp. 310.—EDITOR.]

largest number of votes for Secretary was declared elected. As Mr. Emanuel Haug was no longer a member of the Council he was not eligible to the office of Treasurer, and the Secretary was instructed to call for another vote to fill the office of Treasurer. Dr. Fitz having received the largest number of votes for Editor was declared elected.

It was voted that hereafter the Secretary be requested to present a financial report of the Secretary's office at the meetings of the National Council only.

An invitation from the Springfield Physical Education Society to hold the next convention of the Association in Springfield was read. It was voted to refer the matter to a mail vote of the Council, with the unanimous recommendation of the Executive Committee for its acceptance.

An application was read from the Secretary of the Therapeutic Section for affiliation with the National Association. It was voted to refer the matter to a mail vote of the Council.

The following persons were elected to membership in the Association:

Mr. Charles Ives Freeman, 1487 Euclid Ave., Cleveland, O.
Mr. Jno. Paul Howser, Univ. Station, Austin, Tex.
Mr. Gustaf Ljungh, 47 W. 33rd St., New York City.
Miss May Shields McCully, 12 W. 101st St., New York City.
Mr. J. P. Reed, Lindsay, Ontario.
Mr. Henry C. Yoxall, Y. M. C. A., North Tonawanda, N. Y.

The meeting adjourned.

GEO. L. MEYLAN,
Secretary.

A PROTEST TO THE NATIONAL COUNCIL AND MEMBERS OF THE A. P. E. A.

Editor Review:—

It is always a matter for regret when, to call attention to abuses, it becomes necessary to invoke "printer's ink." The abuses, it would seem, should have been corrected without an appeal to the general public. But when the matter vitally concerns the public, it seems imperative to use whatever means will be most effective to ventilate the methods in question.

Without spending time in preliminaries, the writer desires to call attention to the recent election for officers of the National Council of the A. P. E. A., and its method.

By reference to the Constitution adopted at Detroit by the Convention of the A. P. E. A.,* the government of the Association is seen to be vested in a Council which consists of the president of the preceding council, a delegate from each local society having ten members, a delegate from each national section having ten members, three delegates to represent the members who are not affiliated with any local society, enough additional members from the locality in which the headquarters of the society is located to make a constant working body of five (called the Executive Committee), and the editor of the AMERICAN PHYSICAL EDUCATION REVIEW.

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*See REVIEW of September, 1903, pp. 136-140.

The officers of the Council are a president, a vice-president from each section, a secretary and a treasurer, elected by the Council itself.

In pursuance with the authority vested in the officers of the Council, the secretary some time ago sent notices to the members of the Council asking them to vote by mail to effect a re-organization of the Council. (The new Council was to assume office December 1st, 1905.)

For the additional members of the Council to be elected from New York (to complete the Executive Committee), the old Council at the June meeting suggested five persons from whom two were to be selected. The Council agreed* to have this election by points, and to ask each member to arrange the five candidates in the order preferred. The counting was arranged so that a person named first on a ballot would receive five points, the second four points, the third three points, etc., making it practicable for four or five persons to literally control the election, by placing one candidate for first choice.

The result of the election, as announced, gave the five candidates points as follows: 62-36-33-28-27 and scattering 14. The total number of points equalled 200, the highest number obtained by any candidate was 62 or less than one-third. The second highest has 36 or less than one-fifth of the total. These two were declared elected.

The question of fitness does not enter here in the least, but the question of whether majority votes or minority votes should rule certainly does.

There are twenty-two members of the Council, and a little arithmetic will show that each of them was supposed to vote $5+4+3+2+1=15$ points, or a total of 330. Is anything more needed to show the fallacy of this method of voting?

Apparently thirteen members voted for these additional candidates in various order. The points might easily have stood as follows: 40-39-38-37 and 32 and the candidates getting 40 and 39 respectively, would be declared elected. Is this election by majority vote?

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*In the minutes of that meeting, as published, no agreement or vote is recorded.—[EDITOR.]

The Council doubtless made a mistake in ordering the first ballot taken in this way. The ballots for the editor and the officers of the Council were not ordered by vote of the Council to be taken in this same way, i.e., by points, but, without any authority from the Council, the Secretary sent out notices asking for ballots for editor, president, secretary and treasurer, and sent blanks to be filled in by writing the names of three persons for each office, in the order of preference desired.

Protests against this method of voting, and against electing the officers of the Council before the Council was completed in its membership by the election of the editor, were sent to the president of the A. P. E. A., and a formal protest to the secretary of the A. P. E. A. The following is a copy of the note sent the secretary, on the official stationery, by the delegate from the second largest local society.

BOSTON PHYSICAL EDUCATION SOCIETY.

175 Newbury St., Boston, Nov. 3, 1905.

To the Secretary of the A. P. E. A.:

I enclose herewith my vote for editor of the PHYSICAL EDUCATION REVIEW.

I desire, also, to enter a formal protest against holding an election of officers of the Council before the membership of the new Council has been completed by the election of the editor, and the announcement of the result.

I likewise protest that the method of calling for three choices for an office has not been ordered by the Council, and is not only contrary to the precedents of the society and of most societies, but it is misleading and likely to lead to the choice of a minority candidate.

This, being a matter concerning the observance of the Constitution of the society, is for the *Council* to decide upon.

(Signed) MARY R. MULLINER,
Delegate from B. P. E. S.

This protest is copied in full, because it was *not referred* to the Council; it was not acknowledged, even. Whether it came up in the Executive Committee or not, the writer cannot say, as no reports of the committees, or of the ballots have been received. (Is it an oversight only, or something else?)

It is true that the arrangement by which important matters must be decided by mail votes, is cumbersome and time-consuming, but it is the law of the Association, and until it is changed, short-cuts to any end, desirable or otherwise, must not be allowed if they violate the constitution. The fact is, most of the important questions that have been decided by the Council, have been settled by votes that were less than half the voting strength of the Council.*

There is considerable flexibility in the constitution, and the National Council has a generous assignment of power under it, but this power has not been delegated very largely to individuals of the Council, — yet!

It is most unfortunate that there seems to be a tendency in those who are in power, to go ahead and jump into the middle of things. It has been going on for several years in this society. A disregard of constitutional methods seems to be in the air, and is excused by the question "will anybody object?" and the ready answer, "no," and so it is all right!

Ignorance of the law of the association is not a valid excuse for the members at large in any disregard of it; it is even less an excuse for the members of the Council. To the latter, I urge a more searching attention to the doings at headquarters, for every member of the Council is severally and personally responsible to the Society as a whole for the best interests of the organization as he or she sees it.

It is, with our responsibility as representatives in mind, that I urge a return to methods of majority rule and an observance of the spirit of the organic law, as well as of its letter.

(Signed) Mary R. Mulliner,
Delegate from the Boston Society.

Boston, Dec. 1, 1905.

Dec. 8, 1905.

Since writing the above I have seen a copy of the Secretary's report of the meeting of the Executive Committee, November 15 (which in some way was not sent to me), and I find that the president was "elected" by 27 points out of 74 voted, representing the first choice of nine members of the Council; the secretary by 30 points out of 66 voted, representing the first choice of 10 members; the editor by 38 points out of 72 cast, representing first choice of 12 and second choice of 1. The editor, therefore, is the only one who gets an actual majority of the points voted and a majority vote of the Council. The points voted against the president amount to 47, against the secretary 36, the editor 34.

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*The location of headquarters was decided by seven votes for New York, out of a possible twenty-two, and it has been the case many times, that by a scattering of the votes, and the failure of some to vote at all, the will of a minority has ruled.

In view of the fact that these elections, except that of the editor, are not by the majority of the Council, and that the election for officers was held before the completion of the Council by the election of the editor, I protest the legality of this election and demand a new election for officers.

(Signed) MARY R. MULLINER.

EDITORIAL NOTE AND COMMENT.

The death recently of a young girl at one of our women's colleges in New England while waiting in the gymnasium for her first physical examination before entrance to the gymnasium classes, emphasizes the necessity for some better system of safeguarding students, especially girls, when separated from those who know their condition and thrust into a strange environment such as college offers.

The girl was later in the day to have had an examination by the college physician. There was no intimation that anything was known of cardiac trouble; whether this was known at home does not appear. It is self-evident that the girl died of heart failure, which was very probably induced in her weakened or diseased heart by apprehension of the physical ordeal to which she was to be subjected. If this girl had been seen by her own physician and had taken a letter of caution and advice to the college physician, her life would in all probability have been saved.

It is quite possible for children to grow up, especially girls, without a careful physical examination, therefore it is especially necessary that they should be taken to the family physician for a thorough examination before sending them away from home into strange surroundings which so severely tax their strength. Such examination by a physician familiar with the history of the student, and in consultation with the parents, is far more valuable than a rapid routine examination by a physical director or college physician.

The age at which preparatory school and college life begins is a critical period for both boys and girls and the firm establishment of future health depends largely upon careful nurture, especially in the case of those who are sub-normal in strength and development. Even if the extreme penalty for carelessness is not inflicted and only moderate nervous or physical deterioration occurs, the end result is not seldom seriously reduced efficiency of a more or less permanent character.

That these risks are undertaken ignorantly by parents should be sufficient argument for schools and colleges to require the family physician's examination and certificate. This requirement would be a powerful means of educating parents into an appreciation of the value and necessity of such an examination for all children at regular intervals, that defects of development and environment might be early recognized and adequately remedied.

The method of voting for officers of the Association as detailed in the reports of the Council, p. 307, of this number of the REVIEW, seems to some members of the Council an unfortunate departure from authorized constitutional and parliamentary methods. The protest (p. 310) gives the reason for objecting to this method, but it may be interesting here to consider some of the possibilities which the method offers for the control of the Society's affairs by the pre-arranged vote of a minority of its members. This becomes a serious matter since the present organization makes a mail vote imperative because of the wide scattering of the majority of the members of the Council. Given six candidates to be voted for one position by twenty-two people (each to have four choices) who are widely scattered and not at all well known to each other, results such as the following are possible provided only that a small group decide to vote uniformly in the election:

I. Candidates a, b, c, d, e, f, — four to be selected by 22 voters.

Eight votes (1, 2, 3, 4, 5, 6, 7, 8) are for abcd; the 9th is for adef; the 10th, afed; 11th, fcde; 12th, fcde; 13th edcb; 14th, fedb; 15th, fedb; 16th, fecb; 17th, dfbe; 18th, fedb; 19th, cefd; 20th, defc; 21st, ecfb; 22nd, cdeb.

Summary: 1st position=4 points; 2nd, 3; 3rd, 2; 4th, 1.

	a	b	c	d	e	f
Actual number of choices	10	16	16	20	14	12=88
No. of points	40	33	39	37	35	37=221

A is elected on points by 10 persons.

D fails though voted for by 20 persons.

II. But if only a portion of the 22 actually vote and none vote so as to assist the minority group but scatter their votes, we could have this result, 16 voting.

1-8 vote a; 9th, bcde; 10th, cdef; 11th, defb; 12th, efbc; 13th, fbcd; 14th, bcde; 15th, cdef; 16th, defb. We should then have

	a	b	c	d	e	f
Choice=	8	6	6	7	7	6=40
Points=	32	15	16	19	15	13=110

III. If 5 out of 13 voting should vote each "a" only, the others voting as 9 — 16 above, the result would be

	a	b	c	d	e	f
Choice=	5	6	6	7	7	6
Points=	20	15	16	19	15	13

That is, the candidates supported by only 5 out of 13 voting might be elected entirely without assistance from the other 8 persons voting.

Since the Constitution provides for a "working body of five" in the locality of headquarters, it would thus be readily possible for this small minority to organize and control the affairs of the Association, especially as some of the other members would be sure to vote with them, accidently if for no special reason.

It may be replied that there is no menace to the Association in this possibility. That would have been true under the old constitution which gave the council merely executive powers, but now we have a constitution which is so ill-defined and so elastic and which gives such large powers, by interpretation at least, to the council and executive committee that it is of the utmost importance that important questions should be decided by well considered *majority* votes.

The Amateur Athletic Union took action Nov. 18th, to deprive Arthur F. Duffy of all his competitive records including the 40, 50, 60 yard dashes and 100 yard dash of 9 3-5 seconds. This is the result of Duffy's exposure of so-called amateur athletics in McFadden's "Physical Culture."

Duffy has joined the editorial staff of that journal, and his opening contribution has been of the nature of a confession of his questionable relations to amateur sports during the past few years. Duffy has had an international reputation as a sprinter, and in his article he has told frankly the circumstances which led him to accept money to ensure his competing in certain important events. Duffy's "amateur" position as confessed by himself, is only equalled by his present attitude in contributing sensational articles to "Physical Culture," thereby making himself valuable in his new position. In other words he has made athletics pay to the limit, and is now intent upon using his exposures for the same purpose.

One cannot read Duffy's exposure without being convinced of his present honesty of purpose. It is impossible to believe that Duffy is alone in his violations of the ethics of amateur athletics, and merely stripping him of his laurels will neither eliminate the conditions which tempt men secretly to violate their athletic status, nor insure confidence in the honesty of effort on the part of the A. A. U. to secure conformity to their rules.

To thoughtful readers there must come a conviction that the Amateur Athletic League should go beyond their present action and make a searching investigation of the amateur status of many other athletes and organizations controlling athletic events. The only other alternative is to face the situation squarely and recognize some method by which it is possible for ambitious young men of small means to continue their athletic careers. Such action would prove that the A. A. U. are really striving for purity in athletics and honestly wish the best man to win.

One cannot but think that these rules have been established by the well-to-do who are in this way able to eliminate capable competitors, thereby increasing their own chances of success by narrowing the field. That accident of station should thus throw added advantages on the side of the already well favored seems distinctly against the spirit of our institutions and suggests that the sooner a saner method of control is devised, the better. Certainly nothing seems more unreasonable than that such artificial conditions should lead to the winning of an event by other than the best man. The criterion for competitive tests should be that they furnish an effective method of discovering the best performer in an event.

While professionalism outside of colleges and schools is largely a bugaboo of the A. A. U.'s creation in its effort to gain essentially unfair advantages in sport, in academic circles it is of far more serious import, although not from the A. A. U. rulepoint. Here we see the concentration of every favoring condition that wealth can procure for the players, who in turn bend every energy toward perfecting themselves mentally and physically for the crucial contests, to the exclusion of almost all other interests and efforts even of much important college work. Does not this in itself make them essentially professional in the truest definition of the term?

For a student to be a competitor in college games there can be no question that he should be a member of the university in good standing; that such a student, however, should be excluded from the 'Varsity teams because at some time in his career he has received money for expenses in connection with a summer game, or for assisting in coaching school teams, or in some other manner, is, upon the face of it, an absurdity. This method of classifying amateurs as contrasted with professionals works an unfair distinction against those students who are forced to utilize every means of financial gain for their college course, and renders it often impossible for a student who is in every other way eligible to take part in intercollegiate contests, though fortunately he is not shut out of the inter-class games.

The list of nineteen deaths and two hundred more or less serious injuries directly credited to football during this season's series of games upon college and school grounds furnishes sufficient comment upon the game of football as played in this country. It means that for every player who enters a competition game there is the possibility of serious or fatal injury. Certainly these possibilities and results do not belong to any proper game for schools and colleges.

The deliberate and calculated brutality of football stands proved beyond question, and the wave of reaction against it, which is gathering strength daily, promises to be an efficient force for the re-modelling or abolition of the game.

NEWS NOTES.

NATIONAL EDUCATIONAL ASSOCIATION.

The Executive Committee of the National Educational Association authorizes the announcement that the Forty-fifth Annual Meeting of the National Educational Association will be held in San Francisco, Cal., July 9-13, 1906.

The lines of the Trans-continental Passenger Association have authorized a rate of one lowest first class limited fare for the round trip plus $2.00 N. E. A. membership fee via direct routes; this provides for going one route and returning another. For tickets routed via Portland, Oregon, in one direction, the rate will be $12.50 higher.

The dates of sale will extend from June 25 to July 7, and the return limit will be September 15.

Stop-overs will be allowed west of the Missouri river and St. Paul on both the going and return trips.

MEETING OF THE DEPARTMENT OF SUPERINTENDENCE.

The Department of Superintendence will hold its next meeting in Louisville, Ky., February 27 and 28 and March 1. Supt. John W. Carr, president of the Department of Superintendence, is formulating the program which it is expected will be issued in a special circular early in December. In addition to the regular program the following round tables have already been decided upon:

1. Round table of the city superintendents of the larger cities, led by Dr. Ida Bender, of Buffalo, N. Y.
2. Round table of the city superintendents of the intermediate and smaller cities, led by Dr. J. H. Phillips, of Birmingham, Ala.
3. Round table of state and county superintendents (leader to be supplied).
4. Round table on reformed spelling (leader to be supplied).

The Seelbach Hotel has been selected as headquarters for the Department. Reservations can be made by written application to Supt. E. H. Mark, chairman of the General Committee of Arrangements.

The railroad rate of one and one-third fare for the round trip on the certificate plan has been granted for the meeting in Louisville by the Central Passenger Association and the Western Passenger Association, and will doubtless be granted by all other associations.

Since 1896, the permanent fund of the National Educational Association held by the trustees has grown from $54,961.75 to $147,000.00.

NORTH AMERICAN TURNERBUND.

According to the Annual Report of the Executive Committee there were in the North American Turnerbund on January 1, 1905, 244 societies, grouped in 24 districts. The total membership was 37,090, of which number 5,843 were active gymnasts. There were 2,685 members of junior societies, 2,010 in classes for seniors, 5,798 in classes for women and 5,546 in women's societies, 18,033 boys and 10,823 girls in children's classes, 648 in fencing sections, 2,096 in singing and 825 in dramatic sections; 167 professional teachers of gymnastics are employed in the societies; 216 societies are legally incorporated, and 165 have halls of their own; the total value of property is $4,606,734, of which amount $2,974,526 is debt-free.

At a meeting of the Executive Committee held September 2, it was decided to publish an illustrated souvenir of the Indianapolis *Turnfest,* held last June. The total receipts on the occasion of the Turnfest, including $13,194 of voluntary contributions, amounted to $36,623.48, and the expenses to $35,195.68, leaving a credit balance of $1,427.80.

Thirteen young men and seven young women are enrolled this year in the Turnerbund's Normal School of Gymnastics, in Milwaukee. The length of the course is one year.

F. E. L.

ABSTRACTS.

CHICAGO PLAY PARKS.—Chicago is rapidly developing a wonderful park system. One feature of this system, interesting on account of its social and educational nature, is the playground.

In 1889 a small organization of citizens known as the Municipal Science Club, undertook the study of parks and playgrounds with the result that five playgrounds were opened in the most congested parts of our city, which number has since been increased to nine.

In area these grounds vary from one to five acres. Each is controlled by an experienced director, assisted by a policeman and in summer time by an assistant director, always a trained woman kindergartner. Over the directors is a general athletic director who has charge of all the grounds, and whose services are available without expense to any individual wishing them, or to any team.

Each playground is provided with apparatus of various kinds for small children and girls, a shelter building, a covered sand court for babies, toilet and store rooms. In addition, the Webster playground at Thirty-third and Wentworth avenue has a bath house in which hot and cold shower baths can be had without extra charge, and also a locker room for the use of men and boys wishing to make any change in their clothing before or after exercise. The athletic field has a superior five-lap running track. A smaller one has been built at the Mosely, at Twenty-fourth and Wabash avenue.

The effect of these playgrounds upon the general order of the neighborhood is most marked. The surplus of animal spirits which found vent in juvenile turbulence, acts of vandalism, petty thefts is now turned in a healthful direction. Mothers, teachers, and policemen see the moral uplift and the improvement in the boys and girls when given a proper channel in which to exercise their activities.

It was feared before the experiment was tried that there would be trouble about caring for the property and apparatus, but this has not proved the case. As soon as children realize and see for themselves that acts of vandalism and the destruction of property prove an injury to themselves they lend their support in protecting it.

In 1903 the attendance was 734,693, and in 1904 more than a million. Most of the grounds are also kept open in the winter, the center spaces being flooded and converted into skating rinks. The evidence of the importance and beneficial effects of these grounds on the life of the city is shown by the fact that the people ratified by their votes at the last election a bond issue for small parks.—The School Journal.

FOOTBALL CASUALTIES.—The ending of the football season gives food for contemplation in more respects than one. Each year sees a growing enthusiasm for the game and its extension into secondary schools. There is no doubt that many more have been playing this fall than ever before, hence there should be no special surprise that the list of casualties is greater than in any previous year. It is, in fact, reported that the record of deaths this year is more than double that of the yearly average for the last five years. It is also a noticeable fact that many who have been killed, or who have suffered the most severe injuries, are school boys rather than college students. According to the statistics gathered by the *Chicago Tribune* 19 have died as the result of injuries received in the game, and those seriously injured number 137. This naturally does not include the slight bruises and accidents which every player receives sooner or later. Of those killed, 11 were boys still in the high school and 10 of these were seventeen years of age or younger. Three college students have also died, and the other fatalities were among non-collegiate players. Among the causes of death were violent blows on the body, blows on the head, injuries to the spine, and septicemia resulting from injuries. In addition to this list it appears that there have been 19 broken clavicles and fractures about the shoulder, 31 broken legs, 9 broken arms, 19 fractures of some of the bones of the head and other serious injuries of a like sort.

It is small solace to say that the best players are less likely to be seriously injured than the more inexperienced. As a matter of fact, they may be and often are very badly hurt, as recent experience has shown, but even if this were not so, the situation is no less unfortunate, if young boys in school are to suffer through their inexperience. The game is admittedly a drawing one and popular with the very best classes in the community as amply shown by the attendance at any of the great contests. However this may be, it is essential that the facts of a season's football games should be brought before the authorities and public alike in order that it may be fairly and finally determined whether the game after all is worth its cost.—Editorial, Boston Med. and Surg. Jour.

PHYSIOLOGY OF MUSCULAR WORK, J. M. Lahy (Rev. Sci. (Paris), 5. ser., 3 (1905), No. 7, pp. 201-204; 8, pp. 230-238; 9, pp. 267-273). A general summary and discussion of investigations which have to do with food in relation to work, fatigue, and related questions.—Exper. Stat. Record.

CHANGES IN THE EXCRETION OF CARBON DIOXID RESULTING FROM BICYCLING, G. O. Higley and W. P. Bowen (Amer. Jour. Physiol., 12 (1904), No. 4, pp. 311-335, figs. 7). A respiratory mask of special construction is described which fits tightly over the nose and mouth and contains valves for the separation of the inspired and expired air current.

The respired air is dried by passing through tubes filled with pumice stone and sulphuric acid and then through a gas meter, which is connected with the suction side of a blower, in order to relieve the lungs of the subject from the labor involved in forcing the expired air through the tubes and gas meter. The dry air containing the carbon dioxid passes through an absorption apparatus attached to one arm of a counterpoise balance. As the arm sinks, owing to the absorption of carbon dioxid, a pointer attached to the other arm traces a curve on a drum covered with blackened paper. After the apparatus was calibrated it was tested and found to be very accurate.

About twenty experiments were made to determine the general course of the changes in the output of carbon dioxid resulting from work, which was performed on a stationary bicycle. The working periods in some of the experiments showed 30 to 45 minutes. A large number of experiments were also made to show how soon the effect of muscular work is noted in the carbon dioxid output. The general conclusions which were drawn from the experiments follow:

"The problem of finding the change in rate of output of carbon dioxid resulting from muscular work and other causes is practically solved by the method used in this research. The latent period of increase in output of carbon dioxid from the lungs in case of beginning work is in the close vicinity of 20 seconds, and the increase reaches its maximum in about two minutes. The output of carbon dioxid from the lungs is practically uniform from minute to minute during uniform muscular work, and the blood has had time to take part fully in the process of elimination. Upon cessation of the work the output of carbon dioxid decreases to the normal amount in about the time occupied by its increase and after a like latent period. The results show no indication of any connection of cause and effect between the production and elimination of carbon dioxid and the secondary rise of pulse rate.

—Exper. Stat. Record.

DANGER OF EXCESSIVE WATER DRINKING. In the Blätter für Volksgesundheitspflege of Berlin, Dr. K. Beerwald says that "there are few more positive feelings than that of thirst. While we may go for weeks without food, in a few days without drink men become desperate. This fact is easily comprehended when we consider that 63 per cent. of the body is water, and that we give out each day a large amount of fluid through the lungs, skin and excretions. However, we need to drink relatively little fluid, as our food is to a large extent water, even dry bread being 40 per cent. water, while juicy fruit contains 80 per cent. On the hunt, mountain tour, or walk those people have the most endurance who do not stop at every inn, who do not drink from every spring. And it is rather an indication of bodily weakness if these exercises produce excessive perspiration and extreme thirst. These two things are simultaneous, the one causes the other; the one who perspires a great deal drinks a great deal, and again because he has drunk he perspires. Thus the body becomes a distilling apparatus, but it should be borne in mind that the work performed has had a great deal to do with the causation of weakness and exhaustion. Excessive water drinking not only produces temporary disturbance, it also creates direct organic disorders; the heart and kidneys are particularly affected by the excess, and in these cases the vascular system is over-charged and the heart and kidneys overworked. Proof of such a condition is frequently seen in cases of slight injury. A man who suffers frequently from thirst bleeds easily, and we may well consider that excessive thirst is a sign that the amount of fluid in the body is not kept within bounds, and that this condition must be remedied by opposing the feeling of thirst. We do not mean, however, that on hot days it is not natural to have a more positive feeling of thirst than at other times. When the high temperature takes from the body its fluid we must supply their loss. But even in this case nature has supplied us with abundant fruits, and these should be the first things with which we seek to satisfy our thirst. If, however, one must drink, the best thing is water, or better still, water and lemon juice, or occasionally a glass of milk. We should never drink beer or alcoholic drinks, which only exhaust and tire. It is certainly not a blessing for the fatherland that beer has grown to be the national drink of the Germans.—Jour. Amer. Med. Ass'n.

The British Medical Journal in its series of important articles on physical degeneration called special attention to the fact that there was a very high percentage of physical unfitness among town bred boys and girls, and that it was necessary that the system of physical training in public elementary schools should be much more thoroughly organized. The Army and Navy Gazette (Brit.), Feb. 13, 1904, published an article by Dr. A. H. Rideal in which he urged instead of a large standing army for England, which is an unnecessary expense, a five years' course of drill and instruction for all able bodied boys, requiring an attendance of two or three hours a week in a gymnasium, the last year to include two or more weeks in camp. At the end of the five years' training, young men are to be encouraged to join the volunteer forces and thereafter have their direct military training. The British Medical Journal again emphasizes the necessity for improvement of the national physique, but calls attention to the example of France after the war of 1870, when the attempt was made to train all men and boys by means of gymnastics, military drill, etc., with military officers as instructors. This was a distinct failure for two reasons: the cost was out of all proportion to the results obtained; the results were unsatisfactory as the children affected the manners and language of the drill sergeants with marked deterioration of manners which antagonized the teachers, and the army officers found that too early specialization in military drill was a bad preparation for the recruit.

G. W. F.

TREATMENT OF CONSTIPATION BY VIBRATORY MASSAGE. William L. Dickinson (Detroit Medical Journal, July, 1905) recommends the following technique for the treatment of chronic constipation: The patient lies upon his back with the knees drawn up, to relax the abdominal muscles, and the rubber brush vibratrode is passed four or five times along the ascending, transverse, and descending colons, beginning at the ileocæcal junction, with medium hard pressure. This is followed by light stimulation of the vagi at the sides of the neck. The patient is then turned over on his face, with the arms extended upward and passed around the end of the table to elevate the ribs, and the hard rubber ball electrode is applied from the fourth to the twelfth dorsal nerves with medium stroke and pressure; this is to stimulate the nerves controlling the intestinal tract and rectum. Stimulation of the rectum is additionally made by using the same vibratrode with heavy pressure and medium stroke, over the third, fourth, and fifth lumbar, and the second, third, and fourth sacral nerves. Treatments should be given daily until the bowels move regularly, and then every third day for two or three weeks. He deprecates the use of laxatives in the treatment of chronic constipation, but approves of regulating the diet.—Abstr. New York Med. Jour. and Phil. Med. Jour.

THE PASSAGE OF DIFFERENT FOOD STUFFS FROM THE STOMACH AND THROUGH THE SMALL INTESTINE. W. B. Cannon (Amer. Jour. Physiol., 12 (1904), No. 4, pp. 387-418, figs. 9). Different amounts of protein, fat, and carbohydrate foods were mixed with a small amount of subnitrate of bismuth and fed to cats. The processes of digestion were studied at regular intervals for seven hours after feeding by means of a fluorescent screen and the Röntgen rays.

The investigations are summarized as follows:

"Fats remain long in the stomach. The discharge of fats begins slowly and continues at nearly the same rate at which the fat leaves the small intestine by absorption and by passage into the large intestine. Consequently there is never any great accumulation of fat in the small intestine.

"Carbohydrate foods begin to leave the stomach soon after their digestion. They pass out rapidly, and at the end of two hours reach a maximum amount in the small intestine almost twice the maximum for proteids, and two and a half times the maximum for fats, both of which maxima are reached only at the end of four hours. The carbohydrates remain in the stomach only about half as long as the proteids.

"Proteids frequently do not leave the stomach at all during the first half hour. After two hours they accumulate in the small intestine to a degree only slightly greater than that reached by carbohydrates an hour and a half earlier. The departure of proteids from the stomach is therefore slower at first than that of either fats or carbohydrates. An exception to this general statement was found in egg albumen, which, both in its natural state and in coagulated form, was discharged from the stomach at about the carbohydrate speed.

"When carbohydrates are fed first and proteids second, the presence of proteids in the cardiac end of the stomach does not materially check the departure of the carbohydrate food lying at the pylorus; but the presence of proteids near the pylorus, when proteids are fed first and carbohydrates second, markedly retards the onward passage of the carbohydrates which under these circumstances predominate in the cardiac end of the stomach.

"When carbohydrates and proteids are mixed in equal parts, the mixed food does not leave the stomach so slowly as the proteids, nor so rapidly as the carbohydrates — the discharge is intermediate in rapidity.

"In a mixture of fats and proteids in equal parts, the presence of the fat causes the proteid to leave the stomach even more slowly than the proteid by itself. Fat mixed with carbohydrate in equal amounts also causes the carbohydrates to pass the pylorus at a rate slower than their normal.

"Doubling the amount of carbohydrate food (50 cc. instead of 25 cc.) increases the rapidity of the carbohydrate outgo from the stomach during the first two hours; whereas doubling the amount of proteid food strikingly delays the initial discharge of proteid from the stomach.

"The process of rhythmic segmentation is seen with all three kinds of food stuffs, and the frequency of its occurrence corresponds roughly to the amount of food present in the intestine; a measurement of the length of the segmenting masses in a given number of cases shows that at the regular times of observation, during the first seven hours after feeding, the amount of segmenting activity in the presence of carbohydrates was much greater than in the presence of either fats or proteids. Egg albumen is excepted in this general statement.

"The interval between the feeding and the appearance of food in the large intestine is variable, but the mean for carbohydrates is about four hours, for proteids about six hours, and for fats about five hours. After time is allowed for the later start of proteids from the stomach, there still remains a probability that the proteids pass through the small intestine more slowly than do the carbohydrates."—Abstr. Exper. Stat. Record.

THE RESPIRATION CALORIMETER, W. O. Atwater and F. G. Benedict (U. S. Dept. Agr. Year-book, 1904, pp. 205-220, pl. 1, figs. 2). The respiration calorimeter used in the Department nutrition investigations for studying the total income and outgo of matter and energy is described, and some of the more important results of experiments are summarized.

It was found that the output of carbon dioxid and heat is very nearly proportional to the amount of muscular work performed, the figures given ranging from 25 gm. of carbon dioxid and 65 calories of heat per hour with a man at rest and sleeping, to 210 gm. and 600 calories with a man at very severe muscular work. Other topics discussed have to do with problems of ventilation, the normal variations in body temperature, etc.—Abstr. Exper. Station Record.

THE MINIMUM AMOUNT OF PROTEIN IN THE DAILY DIET, H. Labbé (Rev. Soc. Sci. Hyg. Aliment., 1 (1904), No. 4, pp. 311-328, dgm. 1). An experiment is reported in which the subject, a healthy man, lived upon a simple diet of bread, butter, chocolate, wine, chestnuts, vegetables and fruits.

At the beginning of the test, which covered 38 days, the daily diet furnished a little over 14 gm. nitrogen. The amount was diminished until toward the end of the test it reached a minimum of 1.06 gm. It was then increased and on the last day reached 13.25 gm. The amount of nitrogen and urea iliminated in the urine and the income and qutgo of chlorin are recorded. The energy value of the diet was also calculated at different periods. At the beginning of the test the subject weighed in round numbers 65 kg. and 3 days before the close 63 kg.

In the author's opinion the experiment showed that nitrogen equilibrium can be established and maintained for a long period on a limited protein ration derived entirely from vegetable sources. This indicates that vegetable protein is as valuable as that from animal foods. The nitrogen excreted in the urine other than in the form of urea is discussed, the author pointing out that the quantity is remarkably constant. The experiment is discussed with reference to the lowest protein limit in the diet.—Abstr. Exper. Stat. Record.

FUNCTIONALLY IMPOTENT JOINTS AFTER TRAUMATISM, Revue de Chururgie, Paris. Mally and Richon call attention to the reflex amyotrophia from changes in the spinal trophic centers liable to follow a traumatic articular affection. They conclude that in all cases of functional impotence following an accident to a joint the concomitant spinal cord affection must not be overlooked. Besides the familiar symptoms of reflex atrophy, the electrical resistance will be found below that of the sound side. The spinal cord exhibits lesions corresponding to the joint affection. In the first or dynamic stage of the lesions in the spinal cord there are no changes in the cells discoverable by our technique, and this phase is curable. After the motor centres become appreciably affected the muscular fiber succumbs to degenerative atrophy, and the process is then incurable. This conception of reflex amyotrophia originating in a joint is important for general surgical pathology. It explains the pathogenesis of a large number of joint affections, such as the passive displacement of the humerus, painful valgus, flat foot, painful acquired hip-joint deformities, the genuvalgum and scoliosis of adolescents, etc. The extensive experimental research reported, established that there is no necessary relation between the intensity of the articular affection and the gravity of the reflex amyotrophia induced by it. There is, however, a certain connection between the duration of the joint process and the gravity of the reflex amyotrophia. The more prolonged the irritation in the joint, the more pronounced the lesions in the spinal cord and the greater the probabilities of their being incurable.

Reflex amyotrophia is generally severer in the legs than in the arms, as the mechanical irritation from walking, during convalescence, is more intense than from any exercising of the arms. If the joint affection recurs after apparent recovery, the amyotrophia engendered by the joint affection generally leaves some indelible traces, easily detected by electrical exploration. The prognosis is more serious the greater the difference between the response to electrical tests on the affected and on the sound side. The writers conclude their extensive article with suggestions as to treatment, commending faradization or static electricity for the mild form of reflex amyotrophia. When there are considerable spasmodic phenomena, local faradization is dangerous. Static electricity should be substituted, and all forcible measures avoided. Full particulars of thirty-six cases with results of treatment are tabulated. —Abstr. Jour. Amer. Med. Assoc.

DIET FRUGALITY, Col. Valery Havard, of the United States Army, who was recently with the Russian forces in Manchuria, in an address before the Medical Association of Greater New York on Oct. 9th, in discussing the question as to the low morbidity and mortality of the soldiers in the Russo-Japanese War, said that doubtless several factors contributed to the result: The scattering of the troops over a very long line, a sufficiency of good hospital accommodations, the prompt removal of suspicious cases from camps, the general use of tea as a beverage (that is, water which has been boiled), and, so far as the Russian army was concerned, the general use of soup, which is food and drink in sterilized and very digestible form, and of black bread, which by its laxative effect prevented the accumulation of infectious matter in the intestines. But when all these apparent causes of the wonderful health conditions noted have been taken into account, we are conscious that there remains an underlying cause still unexplained. For it is a fact that various infectious diseases were present, and that the conditions were favorable for their spreading. Under stress of thirst, in warm weather, the soldier of any nation will drink water wherever he finds it, without considering whether it is pure or poluted, and such was the case in Manchuria. Fecal matter was abundant enough in camps, and always more or less exposed. Flies swarmed in summer and clouds of dust filled the air in winter. Furthermore, the men were necessarily much crowded in dugouts or underground huts, with very defective ventilation. Yet, in spite of these conditions, which would have rapidly decimated an American, English or French army, the Russian and Japanese troops remained in excellent health. This meant, in Colonel Havard's judgment, that they were not susceptible to the same extent that we are to typhoid, typhus and dysentery, that they enjoyed a larger degree of immunity to such diseases. As to this comparative immunity to typhoid fever, which is found not only among the Japanese and Russians, but many other oriental peoples — Chinese, East Indians, etc. — he also noticed it in Cuba during our military occupation of that island. Although we brought an abundance of infection with us and scattered it broadcast over the island, typhoid fever never spread. This disease has always been rare among the natives, except in the better classes, whose diet and habits approximate our own.

To account for this immunity, he said, two theories suggest themselves. First, it is possible that in countries where hygiene and sanitation are still primitive or imperfectly understood, so that the inhabitants are constantly exposed to infection, a large proportion of the population contract the disease in infancy or childhood, in a mild form, and thus become immune in adult life. Another theory, and one which he believes more worthy of acceptance, is that which is based on diet. Those countries enjoying more or less immunity to typhoid fever are comparatively poor countries, where frugality is necessarily enforced and has become a habit, where meat is scarce and but little used, where the people, therefore, are practically vegetarians. It seems reasonable, then, to believe that this immunity may be the result of a vegetable diet; under this the intestinal media being less favorable to the growth of the typhoid bacillus, or else a bacterial flora produced which is inimical to this bacillus. As conformatory of this hypothesis, it has been observed in some countries, as in Cuba and India, that the ratio of typhoid fever increases among the richer classes, or those departing from the native frugality and freely indulging in proteid diet.

In the course of the discussion at this same symposium on foods and nutrition held by the Medical Association of Greater New York, and referred to in our New York Notes, Dr. Seaman spoke of the striking illustration of the effects of a defective diet as furnished by outbreaks of disease in both the armies in Manchuria, which were plainly attributable to diametrically opposite causes. During the long and terrible siege of Port Arthur, the Russians, who were hemmed in by land and by sea and were unable to obtain vegetables, suffered severely from scurvy, while the Japanese, subsisting on a diet almost exclusively of vegetables, especially one, namely, rice, deficient in nitrogenous elements of nutrition, suffered equally from beri-beri.—Boston Med. and Surg. Journal.

THE REGULATION OF LUNG VENTILATION (Haldane and Priestly, Oxford. Journal of Physiology, 1905, XXXII, pp. 225-266). Experiments on man to aid in determining how the respiration is regulated. A simple method is used to obtain samples of air from the alveoli of the lung. Experiments include study of amount of air breathed and composition of alveolar air with changes in atmospheric pressure and in amount of oxygen and carbon dioxide in air of room, during muscular work, and in apnœa. The main conclusions are as follows:

The regulating mechanism is exquisitely sensitive to any change in the tension of carbon dioxide in the air of the alveoli. When 1.74 per cent. of carbon dioxide is present in the air, the amount of air breathed is increased 43 per cent., although the subject cannot detect any change, and no perceptible rise occurred in the percentage of carbon dioxide in the alveolar air. An increase of 0.2 per cent. of carbon dioxide in the alveolar air is enough to cause 100 per cent. increase in amount of air breathed.

The regulating mechanism is not at all affected by changes in oxygen tension until the amount is reduced to about 13 per cent. of an atmosphere. This is the oxygen tension at a height of 12,000 feet above sea level.

Apnœa is caused by a fall of tension of carbon dioxide below the amount necessary to excite the respiratory center.

During muscular work the breathing is increased in exact proportion to the amount of carbon dioxide produced in the muscles, and there is a small increase in the tension of carbon dioxide in the air of the alveoli. (The latter result is unlike that found by Zuntz in case of dogs and horses. Zuntz states that in these animals the ventilation during work is more than sufficient to remove the carbon dioxide from the blood.)

The regulation of the breathing normally depends exclusively on the chemical effect of carbon dioxide on the respiratory center.

W. P. B.

REVIEWS AND BIBLIOGRAPHY.

A BIBLIOGRAPHY OF PHYSICAL TRAINING. By J. H. McCurdy, M.D. G. E. Stechert & Co., New York. Published by the Physical Directors' Society of the Y. M. C. A. of North America. Springfield, Mass. 1905. 8vo, pp. 369. Price, $3.00.

One hazards little in predicting that this important work will prove of the utmost value to librarians, teachers and students. It deserves and can hardly fail to receive instant recognition and generous appreciation as a well-planned, comprehensive and effective guide to the mazes of the literature of physical training and subjects which are allied to it. Dr. McCurdy, to whose patience, assiduous industry and scholarly acumen the work bears emphatic witness, has laid the cause of physical training in America under large and lasting obligations. So too have the Physical Directors' Society of the Y. M. C. A. and the donors to the guarantee fund.

This volume, which is of convenient form and well printed, comprises: Introduction, Classification for Physical Training, Index and the Bibliography proper.

In the Introduction Dr. McCurdy: (1) notes the part borne by the publication and financial committees of the Physical Directors' Society of the Y. M. C. A. in promoting the issuance of the work and gives a list of subscribers to the publication fund: (2) sets forth its object, viz.: "to present a subject index of the physical training literature which would be helpful to the physical director and other students of physical training;" (3) shows its relation to 613.71 in Dewey's "Decimal Classification" for use by librarians; and (4) indicates the principle sources utilized in the preparation of the bibliography.

The Classification (pp. 9-16) embracing over 250 sub-classes, is the outgrowth of over thirteen years' experience and is intended primarily for the use of specialists engaged in the study and practice of physical training. The usefulness of the Classification is enhanced by the discriminating general and subsidiary heads and topics. The Classification has been before the public for some years and appears now in its third edition.

The Index (pp. 17-22) serves as a guide both to the foregoing classification and to the Bibliography, which fills the last 346 pages of the book. It is an index of topics and errs somewhat on the side of condensation. It might profitably include perhaps such titles as Boat-racing, Dancing, Gymnastics, Public Baths, Normal Schools (lists of, reports of), Military Gymnastics, Jiu Jitsu and Turning. As both Delsarte and Posse are credited with "a system" the exclusion of Ling, Jaeger, Sargent and Zander is noticeable. The omission of Swoboda *id omne genus,* is to be warmly commended.

While the typography of the Bibliography is less varied and ingenious than that of the Classification, the text is presented in very legible and attractive type, and the device of spacing is effectively employed.

The Bibliography which is strikingly catholic both as regards topics and kinds of publications, is essentially full and minute in its citation of titles and sub-titles of articles in periodicals, reprints and reports, e.g., THE AMERICAN PHYSICAL EDUCATION REVIEW, Mind and Body, Proceedings of the A. A. A. P. E., Report of the Commissioner of Education. The literature of physical training printed in English has never before been subjected to such careful and thorough analysis. This feature must commend itself to the most superficial and unenterprising reader, while one who desires to learn the titles of the most significant books, articles and pamphlets in other tongues will find ample provision for his needs. No mere description can do justice to this work. To appreciate or even to apprehend its multiform merits one must put it to use. The more one uses it the more will he want to use it, and the more thankful he will be to Dr. McCurdy and his colleagues for fashioning so helpful and useful a tool.

E. M. HARTWELL.

BIBLIOGRAPHY OF CHILD STUDY, for the year 1905. Louis N. Wilson, Librarian, Clark University, Worcester, Mass. The Pedagogical Seminary, September, 1905, pp. 304-334.

Mr. Wilson's eighth annual contribution of 30 pages and 429 titles.

Most of the literature of the world has been collated by Mr. Wilson and the more important books and articles briefly commented upon in the preparation of the bibliography. For the student of physical education it represents the most important annual bibliography published. A perusal of its pages cannot but open every reader's eyes to the activity existing in all lines relating to child study. Mr. Wilson has taken a broad view of the meaning of child study, and includes everything bearing directly or indirectly upon the condition of the child and the influences affecting him, hence the bibliography is especially rich in articles dealing with collateral phases of the child study movement ordinarily neglected. This bibliography, together with those of past years, can be obtained in reprint form upon application to Mr. Wilson at $0.50 per copy.

G. W. F.

A BOY'S CONTROL AND SELF-EXPRESSION. By Eustace Miles. Published by the author, 10 St. Paul's Road, Cambridge, England. Pp. 572.

This author is an honor coach and lecturer at Cambridge, England, also tennis champion, who has already written much that is wholesome on physical exercise and training. The merit and even charm of this book is that it takes a breezy, natural, healthful, English view of sport. There is almost nothing in it from beginning to end that suggests erudition. Physical training and games are for this author chiefly to teach control of appetites, regularity, sportsmanlike spirit, to develop the sense of honor in a normal way, and to favor self-expression. The experience of the author in many forms of sport is a constant fund of illustrations from which he draws, which give his book great zest. He believes body care leads to purity, favors the control of will over a life, predisposes to making a better map of it, develops individuality normally, gives buoyancy, etc. We are not told precisely how this book originated, but it suggests short talks or articles, somewhat occasional, put together. At any rate, the book throughout smells of the play-ground and out-of-door, and not at all of study or of books.—Rev. Pedigogical Seminary.

LES ANOMALIES MENTALES CHEZ LES ECOLIERS, par Jean Philippe et G. Paul-Boncour. (Bibliotheque de Philosophie Contemporaine.) Felix Alcan. Paris. 1905. Pp. 156.

These authors first classify the various groups of abnormal children. They then discuss the following topics: the backward scholar, the unstable child, the aneasthetic, epileptic and hysterical children. After defining intermediate states and sub-normal pupils, they pass on to discuss the true and false abnormalities, and the question of what constitutes pedagogic backwardness. A final chapter is devoted to minor anomalies.—Rev. Pedigogical Seminary.

MIND AND BODY. MILWAUKEE FREIDENKER PUBLISHING CO., 1905. VOL. XII.

No. 136 (June). German Gymnastics, by Christian Eberhard. Per Henrik Ling and His Successors at the Stockholm Normal School of Gymnastics, by Dr. F. E. Leonard (concluded from the May number; reprinted from the December REVIEW). Athletics and Education, by Paul Van Dyke. Official Program of the Twenty-ninth National Festival of the North American Gymnastic Union (Turnerbund), Indianapolis, Indiana, June 21-25, 1905. In the Gymnasium, by Dr. Robert Nohr (continued from former numbers, and in Nos. 137-140). Present Status of Athletic Clubs in Brooklyn, by Dr. Geo. J. Fisher. How to Foster Games and Athletics, by Dr. A. E. Garland.

No. 137 (July). Gymnastic Nomenclature, by Dr. E. H. Arnold (continued from former numbers, and in Nos. 138 and 139). Friedrich Ludwig Jahn, and the Development of Popular Gymnastics (*Vereinsturnen*) in Germany, by Dr. F. E. Leonard (concluded in No. 138; reprinted from the March REVIEW). The Raw Food Fad, by Dr. Geo. Fisher. Extracts from European Journals of Physical Training, by Carl L. Schrader. Report of the National Festival of the North American Gymnastic Union, held in Indianapolis, June 21-25. Chicago Playgrounds.

No. 138 (August). Gymnastic Nomenclature, by Dr. Robert Nohr (continued in No. 139). The Twentieth Century School, the Social Center of the Community, by Lawrence H. Tasker. The Lake Geneva Summer School of Physical Training, by Wm. E. Day. The Importance of the School Yard for the Physical Well-Being of School Children, by Dr. E. H. Arnold.

No. 139 (September). The First Introduction of the Jahn Gymnastics into America (1825-30), by Dr. F. E. Leonard (continued in No. 140 and later). Reports of the Harvard and Yale Summer Schools.

August 4-7, 1905.

No. 38 (September 21). The Great Importance of Male Choruses in the Turnvereine, by Ludwig Stahl. Report of the Nineteenth Turnfest of the Netherlands *Gymnastik-Verbond*, held in Apeldoorn, July 28-30, 1905, by O. Rein (continued in Nos. 39 and 42). Report of the Seventh German Congress in behalf of Popular Sports and Games for the Young, held in Frankfort, September 15-18, 1905, by Böttcher.

No. 39 (September 28). The Value of Free Exercises in Popular Gymnastics (*Vereinsturnen*), by G. Zimmermann. Individual Exercises Performed by the Representative Squad of the German Turnerschaft at the Indianapolis Turnfest of the North American Turnerbund.

No. 40 (October 5). The Importance of Physical Training in the Continuation Schools, by W. Winter. The Prescribed Attitude of the Body in Popular Exercises, by Dr. med. Körting. The New Gymnasium of Turnverein "Jahn" in Munich, by Anton Weissgerber.

No. 41 (October 12). The Teacher of Gymnastics in the German Turnverein, by Oskar Rein.

No. 42 (October 19). Review of E. Kregenow and W. Samel's "Gerätkunde für Turnlehrer und Turnvereine" (Berlin, Weidmannsche Buchhandlung, 1905).

TIDSKRIFT I GYMNASTIK. STOCKHOLM, P. A. NORSTEDT & SOENER. VOL. VI (XXXII. YEAR).

1905; No. 1. The Value of Singing Games in the Schools, by Sally Högström, Wendla Anderson-Falck, and Others. Gymnastics in Greece, by J. E. Chryssafis.

No. 2. A Comparison of French, Italian, German, Austrian, and Swedish Bayonet Fencing, by Einer Nerman. The Parries in Foil Fencing, by Prof. L. M. Törngren and Others.

F. E. L.

No. 140 (October). Progression in Games, by William A. Stecher. The Scope of School Hygiene in Modern Education, by Dr. T. D. Wood (to be concluded). A Self Replacing Jump-Stick, by Capt. H. J. Koehler. A Spanish Dance, Arranged for Twenty-four Ladies, by Oscar E. Ruther.

MONATSSCHRIFT FUER DAS TURNWESEN. BERLIN, WEIDMANNSCHE BUCHHANDLUNG, 1905. VOL. XXIV.

No. 4 (April). A Further Chapter on Joy in Our Work as Teachers of Gymnastics, by Dr. Neuendorff (see No. 2). Berlin and School Gymnastics, by H. Schröer. Proceedings of the Prussian House of Representatives with reference to the Training of Teachers of Gymnastics and to Inspectors of Gymnastics. Courses in Games (for Teachers) to be given in Germany during 1905, compiled by Prof. H. Raydt.

No. 5 (May). Prof. Woldemar Bier, by P. Züllchner. Ludwig Puritz, by K. Sparnecht. The Plan of Instruction in Gymnastics at the Normal Schools of Saxony, by W. Frohberg. Review of H. Wortmann's "Das Keulenschwingen in Wort und Bild" (4. Auflage, neubearbeitet von P. Hentzschel. Hof. a. S., R. Lion, 1905. Pp. 236, illustrated).

No. 6 (June). The German *Turnlehrer-Verein*, compiled from the Annual Reports of Branch Societies by the Second Secretary, Dr. Nagel. E. von Schenckendorff's Proposal of State Inspection of Gymnastics, by H. David. The Development of Gymnastics in the City Schools of Posen in the Last Twenty-five Years, by Oberturnlehrer Kloss.

No. 7 (July). Points to Be Observed when "Popular Exercises" are Used in Gymnastic Instruction, by Fritz Eckardt. Thoughts on Education and Instruction, by Dr. Neuendorff. A

Biographical Sketch of Adalbert Böhm, by Prof. Ludwig Glas. Gymnastics and Athletic Sports at the St. Louis World's Fair, by L. Berner.

No. 8 (August). Excuses from Gymnastic Lessons, by H. Schröer. The Short-sightedness of Pupils in Secondary Schools a Danger to National Defence, and How to Combat It, by von Ziegler.

No. 9 (September). How to Teach "Popular Exercises," by Fritz Eckardt (see No. 7). The Gymnastic Committee of the German Turnerschaft on Swedish Gymnastics for Girls.

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No. 1 (April 15). Art and Physical Education, by Minna Radczwill (concluded in No. 2). Gymnastics in the Higher Schools, by Dr. Siebert. The Play Movement in Sweden, by Dr. F. A. Schmidt.

No. 2 (May 15). Method in Gymnastic Games, by J. Sparbier. School Gymnastics and Play, by Dr. H. Meisner. Notes on the Game of Schleuderball, by K. Schenck.

No. 3 (May 31). Reviews of the following: 1) Dr. med. F. A. Schmidt's "Physiologie der Leibesübungen" (Nach seinem auf der Weltausstellung in St. Louis, 1904, gehaltenen Vorträgen bearbeitet. Leipzig, R. Voigtländer, 1905); 2) Turninspektor A. Hermann's "Ratgeber zur Einführung der Volks- und Jugendspiele" (Fifth edition, revised and enlarged, with numerous illustrations. Leipzig, B. G. Teubner, 1905); 3) the "Vierteljahrsschrift für körperliche Erziehung. Organ des Vereins zur Pflege des Jugendspiels in Wien" (Herausgegeben von Prof. Dr. L. Burgerstein und Dr. V. Pimmer. Wien, F. Deutick, 1905. The first number was published in April).

No. 4 (June 17). Physical Training at the St. Louis Exposition in 1904: Memories and Impressions, by Dr. med. F. A. Schmidt (continued in Nos. 5 and 6). The History of Rowing in Germany, by Dr. Kurth. Who Shall Teach Gymnastics in the Higher Schools? by F. F. Misselwitz. How Swimming is Taught in the Hamburg Elementary Schools, by Möller. Reviews of: 1) L. M. Törngren's "Lärobok i Gymnastik för Folkskollärare- och Folkskollärarinneseminarier" (Stockholm, P. A. Norstedt, 1905); 2) Dr. Clement Duke's "Health at School, Considered in Its Mental Moral, and Physical Aspects" (Fourth edition. London, Rivington, 1905); 3) Dr. F. A. Schmidt's "Anleitung zu Wettkämpfen, Spielen und turnerischen Vorführungen bei Jugend- und Volksfesten" (Third edition. Leipzig, B. G. Teubner, 1905).

Nos. 5 and 6 (July 19). Hygienic and Aesthetic Principles the

Basis of Physical Education, by Wilhelm Reese. Water Sports and the School, by H. Wickenhagen (concluded in No. 8). How to Manage the Playground in the Interest of the Many, not the Expert Few, by Julius Sparbier. Official Courses in Games (for Teachers), by Dr. F. A. Schmidt. The International Congress for Sports and Physical Education in Brussels (June 9-14), by Prof. Pawel.

No. 7 (August 5). Physical Exercise at the University of Erlangen One Hundred Years Ago, by Prof. Dr. Martin. The Convention of the American Physical Education Association in New York, April 17-19, 1905, by Dr. med. F. A. Schmidt.

No. 8 (August 26). Invitation to the Seventh German Congress in behalf of Popular Sports and Games for the Young, to be held in Frankfurt a. M., September 15-18, 1905. The Dance in American School Gymnastics, by Dr. F. A. Schmidt.

Nos. 9 and 10 (September 9). Physical Strength, by Prof. Dr. Otto Baumgarten. The Physical Education of Our Girls, by Dr. Alice Prosé. How I Exercise in the School with the Little Folks, by W. Lottig (continued in later numbers). Review of the Fourteenth "Jahrbüch für Volks- und Jugendspiele" (In Gemeinschaft mit E. von Schenckendorff und Dr. F. A. Schmidt herausgegeben von Prof. Wickenhagen. Leipzig, B. G. Teubner, 1905).

No. 11 (October 7). Gymnastics in the Secondary Schools, by Dr. Siebert. The University Gymnastic Association (*Akademischer Turnbund*) and Its Fourth Turnfest, in Dessau, August 4-7, by Oberlehrer Binting. The Course in Games at Nääs, Sweden, by Minna Radczwill. Reviews of Kregenow and Samel's "Gerätkunde für Turnlehrer und Turnvereine" (Berlin, Weidmannsche Buchhandlung, 1905. Pp. 124, illustrated), and Hofrat Dr. Paul Schubert's "Das Schularztwesen in Deutschland" (Hamburg and Leipzig, Leopold Voss, 1905. Pp. 168).

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No. 18 (May 4). The Importance of Active Games and the Necessity of an Obligatory Afternoon of Play, by H. Raydt.

No. 19 (May 11). The First German Institution for the Teaching of Gymnastics, Founded in 1805 at Erlangen by Dr. Joh. Ad. Karl Roux, by Hermann Kuhr (continued from Nos. 16 and 17, and in Nos. 20, 22 and 24). Historical and Legendary Feats of Jumping Critically Considered, by Dr. phil. Martin Vogt (continued in Nos. 21 and 22).

No. 20 (May 18). The General Free Exercises at the Twelfth Bavarian Turnfest, in Kempton (illustrated), by J. G. Grotz.

No. 21 (May 25). The Popular Exercises of German Gymnastics, by Fritz Eckardt (concluded in No. 23).

No. 22 (June 1). Hurling Exercises with the Iron Wand, by Henning. Exercises Performed by the Model Squad of the German Turnerschaft at the Indianapolis Turnfest.

No. 24 (June 15). Two-Minute Gymnastics, by G. Dostal. Physical Exercise at the Prussian Normal Schools (*Seminaren*), by Karl Rossow (concluded in No. 25).

No. 25 (June 22). Gymnastics for Juniors in the Turnvereine; Its Educational and Hygienic Problem, by A. Thoma (concluded in No. 26). A System of Popular Competitive Exercises, by Dr. R. Gasch.

No. 26 (June 29). The Visit to America by the Model Squad of the German Turnerschaft (continued in Nos. 30, 35-37).

No. 27 (July 6). Pindar and the Hellenic Gymnastics, by Prof. Boethke (continued in Nos. 29, 32, and 34). Proposals for the Organization and Improvement of Gymnastics in the Elementary Schools in Pomerania, by W. Sparr (concluded in No. 28).

No. 28 (July 13). How Can We Promote National Defence by Education? by Alwin Herrich.

No. 29 (July 20). Bibliography of German Gymnastics, Games, and Related Subjects from January 1 to June 30, 1905, compiled by Ferd. Goetz.

No. 30 (July 27). Statistical Report of the Condition of the German Turnerschaft on January 1, 1905, by the Business Manager, Dr. Rühl (concluded in No. 31).

No. 31 (August 3). Jiu-Jitsu, by Dr. Rudolph Gasch.

No. 33 (August 17). The Broad Jump and the High-broad Jump, by Dr. R. Gasch. Swimming, by Dr. med. W. Kühn.

No. 35 (August 31). The Meeting of the Committee of the German Turnerschaft in Köningsberg i. Pr., August 5 and 6, 1905. Competitive Prisoner's Base in the Berlin Schools, by Paul Gerber.

No. 36 (September 7). The Section Allotted to Gymnastics in the School Museum at Breslau, by H. Hübner.

No. 37 (September 14). The National Importance of German Gymnastics, by Oberlehrer Friesland. The Fourth Turnfest of the Academic (University) Turnbund, held in Dessau.

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